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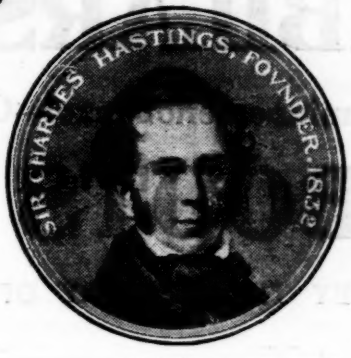

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SECTION OF SURGERY.

Sir HENRY M. W. GRAY, K.B.E., C.B., C.M.G., F.R.C.S.Edin., President.

DISCUSSION ON THE TREATMENT OF OBSTRUCTION OF THE COLON.

OPENING PAPER

BY

ARTHUR H. BURGESS, M.B., CH.B.VICT., F.R.C.S.,
Professor of Clinical Surgery, University of Manchester; Honorary Surgeon, Manchester Royal Infirmary.

FOR the purpose of this discussion I propose to limit the term "obstruction" to cases in which there is some actual gross mechanical obstacle to the onward course of the faecal stream, and to exclude from consideration the question of intestinal stasis, which, as it affects both the colon and the small intestine, has been so thoroughly ventilated during recent years, and also that of "paralytic ileus," so frequently associated with inflammatory conditions of the peritoneum.

In searching for statistics to serve as a basis for my remarks, although several series representing the work of individual surgeons have been published I am not aware of any large series illustrating the collective efforts of the staff of a hospital in this country since the review, by the late S. H. Rouquette, of all the cases of acute intestinal obstruction admitted to St. Thomas's Hospital during the six years 1908-13 inclusive, comprising 615 cases, and published in the *St. Thomas's Hospital Reports* for 1914. I have, therefore, analysed all admissions for acute intestinal obstruction to the Manchester Royal Infirmary during the ten years 1913-22 inclusive, and am deeply indebted to my junior colleague, Mr. A. H. Southam, for his careful search of the records.

Out of a total admission of 66,373 cases to the surgical wards during this period 1,278 were for acute intestinal obstruction, including small and large intestine cases.

Analysed on the same lines, for the purpose of comparison, as those adopted in the St. Thomas's Hospital series already alluded to, we have the following:

TABLE I.

	No. of Admissions.	Deaths.	Percentage Mortality.
Group A.—Strangulated external hernia	833	192	23.01
Group B.—Non-malignant obstruction (excluding intussusception)	105	53	50.04
Group C.—Malignant obstruction	175	62	35.22
Group D.—Intussusception	165	61	36.9
Total	1,278	368	28.79

Frequency of Involvement of the Colon in Acute Intestinal Obstruction.

Including the cases of intussusception, all of which appear from the records to have been of the ileo-caecal or ileo-colic type, the colon was concerned in 364 out of the 1,278 cases, or 28.48 per cent. If intussusception be excluded, the number is reduced to 199, or 17.87 per cent.

This table shows well the great preponderance of malignant growth as compared with other causes of acute colonic obstruction, constituting 87.9 per cent. of all cases. Stated differently, we may say that if, in any given case of acute intestinal obstruction, we can locate the site of obstruction to the colon, and can also exclude strangulated external hernia and intussusception as the cause (usually readily done), then there remains a 91.04 per cent. chance of the condition being due to a malignant growth, or, roughly, a 9 to 1 chance.

TABLE II.—*Pathological Causes of Acute Obstructions of the Colon (Excluding Intussusception).*

	No of Cases.	Deaths.	Percentage Mortality.
Malignant growths of colon ...	173	59	34.1
Extracolonic malignant growths	2	0	
Strangulated hernia	9	3	33.3
Adhesions	7	0	
Tuberculous disease of caecum ..	2	0	
Acute diverticulitis	1	0	
Volvulus	5	2	40.0
Total	199	64	32.16

Colonic Obstruction due to Malignant Growth.

In the period under review 485 cases of malignant growth of the large intestine were admitted, of which 173 were associated with acute obstruction—a percentage of 35.67. Table III shows the proportional distribution of these growths in the various segments of the colon, with the relative incidence of acute obstruction in each segment, and the mortality.

TABLE III.—*Analysis of Malignant Growths of the Colon.*

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
Segment of Colon.	Total Number of Malignant Growths.	Percentage Frequency.	Associated with Acute Obstruction.						
			Number of Cases.	Relative Percentage Importance in causing Acute Intestinal Obstruction.	Order of Relative Importance.	Recoveries.	Deaths.	Mortality.	Number of Cases not Associated with Acute Obstruction.
Caecum	25	5.15	11	6.35	4	8	3	27.27	14
Ascending colon ...	11	2.26	3	1.73	8	3	0		8
Hepatic flexure ...	7	1.44	5	2.89	7	2	3	60.0	2
Transverse colon ...	22	4.52	11	6.35	4	5	6	54.54	11
Splenic flexure ...	39	8.04	28	16.18	2	19	9	32.14	11
Descending colon ...	12	2.47	7	4.04	6	6	1	14.28	5
Sigmoid colon ..	143	29.48	89	51.44	1	58	31	34.83	54
Rectum	226	46.59	19	10.98	3	13	6	31.57	207
Total	485		173			114	59	34.10	312

A comparison of the figures in columns 3 and 5 is of special interest. Thus, although the sigmoid colon was the site of only 29.48 per cent. of all malignant growths of the colon, yet in it occurred 51.44 per cent. of all cases of acute colonic obstruction from malignant growth. Conversely the rectum accounted for 46.59 per cent. of all growths, but for only 10.98 per cent. of those associated with acute obstruction. In an analysis of all the St. Thomas's Hospital cases of obstruction of the colon from malignant growth during the twelve years 1900-11 inclusive, E. M. Corner (*Clinical Journal*, October 27th, 1915) gives the order of frequency as (1) iliac and pelvic colon, 47 per cent.; (2) rectum, 18.5 per cent.; (3) splenic flexure, 14.3 per cent.; (4) transverse colon, 11 per cent.; (5) descending colon, 4 per cent.; (6) caecum, 3.3 per cent.; (7) hepatic flexure, 1.7 per cent.; (8) ascending colon, 0.2 per cent.

These two large series agree fairly closely, the main difference being the interchange of the positions of the rectum and splenic flexure respectively.

Analysis according to situation in the right or left half of the colon shows that only 13.29 per cent. of the growths causing obstruction were on the right side, as against 86.7 per cent. on the left; that is to say, there is a 6.5 to 1 chance of a malignant growth that has caused acute colonic obstruction being found on the left side—a fact not without its importance in relation to operative treatment.

TABLE IV.—*Operations Performed for Acute Colonic Obstruction (Excluding Intussusception), with Results.*

	No. of Cases.	Deaths.	Percentage Mortality.
A. *Malignant Obstructions*—175 cases (173 growths of colon, 2 extra-colonic growths).			
1. Exploratory laparotomy, followed by—			
(*a*) Primary resection	9	6	66.6
(*b*) Lateral anastomosis	11	3	27.7
(*c*) Caecostomy	56	18	32.14
(*d*) Colostomy, transverse ...	13	5	38.46
(*e*) Colostomy, sigmoid	63	21	33.33
2. Colostomy alone (all sigmoid) ...	17	5	29.41
3. Caecostomy alone	5	3	60.0
4. Enterostomy alone	1	1	100.0
Total	175	62	35.22
B. *Non-malignant Obstructions.*			
1. Herniotomy	9	3	33.33
2. Division of adhesions	7	0	
3. Ileo-sigmoidostomy, for tuberculous caecum	2	0	
4. Laparotomy and drainage for acute diverticulitis	1	0	
5. Volvulus—			
(*a*) Untwisting alone	1	1	100.0
(*b*) Untwisting combined with colostomy	4	1	25.0
Total	24	5	20.83
Total of all cases	199	67	33.66

Primary Resection.—It must be laid down as a basic principle of the treatment of acute obstruction of the colon that resection with immediate restoration of continuity (that is, without drainage of the proximal bowel) is an unjustifiable procedure. In this series it was performed 9 times with 3 recoveries (2 of caecum, 1 of sigmoid) and 6 deaths (1 of transverse colon, 1 of splenic flexure, and 4 of sigmoid)—a mortality of 66.6 per cent., which is almost double the average mortality of the whole series. It is the experience of most surgeons that whereas primary resection with immediate union can be successfully carried out in the small intestine, and is there, in fact, the operation of choice, the same procedure proves disastrous in the colon. This difference is accounted for by the much greater freedom with which resection can be carried out in the small gut, so that it is always possible to secure a fairly healthy bowel at the site of union and to bring the ends together without tension; moreover, the contents of the ileum are more fluid, move along more rapidly, and are less septic than those of the colon. On the other hand, the consequences of establishing an artificial anus in the small intestine are more serious than in the colon, and nutrition may be greatly impaired when the fistula is placed (and it is often impossible to know its exact location) well away from the ileo-caecal valve. In the ileo-caecal region the conditions approximate to those obtaining in the small bowel, and this is the only region of the colon in which primary resection followed by immediate anastomosis has any claim whatever to consideration. In the Manchester Royal Infirmary series two of the three successful cases concerned the ileo-caecal region; excluding the caecum, the mortality for the rest of the colon is 85.7 per cent. Whenever resection of the colon is essential, as in gangrene from volvulus or internal strangulation, it must be combined with drainage of each end of the bowel, preferably by tying in a Paul's tube; at a later operation continuity may be restored. This "two-stage" operation, associated with Paul and with Mikulicz, is sometimes advocated in acute colonic obstruction from malignant growth: The bowel concerned is mobilized, its mesentery divided between ligatures, the whole coil brought outside the abdominal wound, which is then sutured closely around its two limbs, and a Paul's tube is fixed into each limb; either at the time or a few days later the coil is cut away; still later, continuity is restored either by the use of the enterotome to divide the "spur," or by direct suture. This operation should, in my opinion, be restricted to cases where the colon is gangrenous; as applied to malignant growth it has the very strong objection that in the presence of obstruction the removal of the lymphatic area in the mesentery is very likely to be insufficiently carried out. It is far better to content oneself with a caecostomy for the immediate relief of the obstruction and to follow this up later by a leisurely and thorough excision of the bowel and its corresponding lymphatic area along the lines so excellently laid down in the work of Jamieson and Dobson.

Lateral anastomosis was performed in 11 cases, with 3 deaths—mortality 27.7 per cent.; there were 5 ileo-colostomies (with 2 deaths), 2 caeco-colostomies (both recovered), and 4 colo-colostomies (3 of the transverse colon to the sigmoid, all of which recovered, and 1 of the descending colon to the sigmoid, followed by death). In all these cases a preliminary laparotomy had disclosed an inoperable malignant growth and the palliative anastomosis was the alternative to colostomy. Ileo-colostomy for obstruction from growth of the colon, carried out in cases where, as usually obtains, the ileo-caecal valve is competent to prevent the regurgitation of caecal contents into the ileum, entails, as was pointed out many years ago by Professor Rutherford Morison, a serious risk of later gangrene or perforation of the caecum; this is due to the tension caused by the gradual accumulation of intestinal secretions pent up between the ileo-caecal valve and the growth. Caeco-colostomy is the correct procedure in these circumstances, and if ileo-colostomy be performed it must be combined with either appendicostomy or caecostomy to prevent such tension. I have used ileo-colostomy for the immediate relief of obstruction shown at exploratory laparotomy to be due to an operable carcinoma of the transverse colon near the splenic flexure; later the whole of the gut between the sites of anastomosis in the ileum and sigmoid, together with its mesentery, was successfully excised, the ends of the bowel being simply crushed, ligatured, and invaginated by purse-string suture.

I propose to approach the discussion of the appropriate treatment of acute obstruction of the colon mainly from the clinical standpoint and to consider the cases as they present themselves prior to the operation under three groups:

Group I.—Where we cannot tell whether the obstruction is in the ileum or the colon.

Group II.—Where we can locate the obstruction to the colon, but its situation therein is not known.

Group III.—Where the site of obstruction in the colon can be definitely ascertained.

GROUP I.

The size of this group should steadily diminish as experience increases, and with a reasonable amount of time expended upon a careful physical examination of the abdomen I believe the diagnosis between small and large intestine obstruction is possible in the majority of cases. As regards their relative frequency, the colon was concerned in 28.48 per cent. of all cases of acute intestinal obstruction in the Manchester Royal Infirmary series, but if we exclude the two groups of strangulated external hernia and intussusception, both of which are readily recognized—the former by the palpable swelling at a hernial orifice, the latter by its age of incidence and its very characteristic

signs—then there remain 190 colonic to 90 ileal obstructions; that is to say, there is slightly greater than a 2 to 1 chance of any acute intestinal obstruction being situated in some part of the colon. A careful inquiry into the previous medical history is helpful, the entire absence of any intestinal troubles prior to the onset of obstruction being in favour of the small intestine: of all causes of acute colonic obstruction 87.9 per cent. are due to malignant growth, and this usually produces some previous intestinal disturbances, such as colicky pains after meals, often travelling to and becoming arrested at the same spot, associated with borborygmi which are frequently audible to others, attacks of diarrhoea (especially when the right half of the colon is concerned), gradually increasing constipation in growths of the left side, slight attacks of flatulent distension often alternating with diarrhoea, occasional passage in the stools of large quantities of mucus, which may be blood-stained. In less acute types the assistance of the sigmoidoscope and of radiography after a barium enema may be sought, but these are scarcely practicable in the really acute case. It is mainly upon a physical examination of the distended abdomen that one has to rely for a differential diagnosis: its shape, whether the bulging is confined to the flanks as in large gut obstruction and especially when the ileo-caecal valve is competent, or whether it is mainly the central parts that are distended as in obstruction low down in the small intestine; whether the outlines of individual distended coils can be seen forming "ladder patterns" as in ileal obstruction; whether visible peristalsis can be detected in the dilated coils; and whether the hardening of the intestinal wall can be felt as the peristaltic wave passes along it—"palpable peristalsis." Auscultation—a much neglected method of physical examination of the abdomen—is often extremely useful if one is conversant with the character and site of the normal intestinal sounds and of the alterations in tone, intensity, and distribution met with in obstructive conditions. The "keynote" to the diagnosis is the condition of the caecum: if this is visibly distended, or, failing this, if it can be definitely felt to alternately harden and soften under the examining fingers, then the obstruction is distal to it. It is unnecessary to emphasize the extreme importance of a careful rectal and vaginal examination.

If, however, a painstaking investigation on these lines fails to show whether the obstruction is in the small or the large intestine, then the first step in the operative treatment must, except in the most desperate cases, necessarily be in the nature of an exploratory laparotomy. This I believe to be best carried out through a paramedian incision splitting the fibres of the lower portion of the right rectus abdominis, and just large enough to admit the hand, every care being taken to prevent the escape of distended bowel. The caecum is at once felt for, and in cases of colonic obstruction will be found distended. The sigmoid colon is next examined, and if found distended the condition is either a volvulus (suspected if distension be extreme), or an obstruction in the lower sigmoid or rectum, which palpation lower down will readily locate. If it is collapsed, the omentum is next drawn down and the transverse colon examined; if this is distended the hand is passed in a distal direction, palpating the left half of the transverse colon, the splenic flexure, and descending colon until the obstruction is felt; if collapsed, a similar investigation is made of the right half of the transverse colon, hepatic flexure, and ascending colon. If the condition of the patient be grave this examination of the sigmoid and transverse colon must be omitted, and, once it has been decided that the caecum is distended, the incision should be rapidly closed and caecostomy performed through a "gridiron" incision in the right iliac fossa, a small Paul's tube being tied into the caecum, or a rubber tube introduced similarly to that in the Kader-Senn operation of gastrostomy, or by the method described by Lockhart-Mummery in the *Lancet* of November 25th, 1922. In a few cases I have introduced the tube through the appendix (appendicostomy), but it is exceptional thus to be able to introduce a tube sufficiently large to give material relief.

When the site of the obstruction in the colon has been located and the cause is found, as is most frequent, to be a growth, then its local fixity, the extent of glandular involvement, and the presence of secondary deposits in the liver and peritoneum should be rapidly investigated and a decision made on the possibility of its future removal. If the decision be in the affirmative the incision is closed and caecostomy performed as above; only in exceptional cases, where distension is comparatively slight and the general condition good, can an artificial anus be avoided by lateral anastomosis sufficiently far away to allow of a radical extirpation of the growth and its corresponding lymphatic area later on, such as ileo-sigmoidostomy for growths between the caecum and descending colon. If it be decided that the growth is inoperable, short-circuiting is preferable to an artificial anus whenever the bowel distal to the growth is readily accessible, but, as already explained, ileo-colostomy (unless combined with appendicostomy or caecostomy) should never be employed as a permanent condition in malignant obstruction of the colon. Short-circuiting is frequently impracticable, in which event colostomy just above the growth is required, either in the sigmoid, transverse colon, or caecum according to the site of obstruction. For transverse colostomy the upper end of the original incision is utilized, but for either sigmoid colostomy or caecostomy this incision is closed and a "gridiron" made in the corresponding iliac fossa. Every effort should be made to avoid caecostomy as a permanent state owing to the troublesome excoriation of the skin that occurs around it from the fluid and irritating character of the caecal contents. If a definite decision as to the future operability of the growth cannot at once be made it should be regarded, for the time being, as operable, and the question finally determined at a subsequent exploration after the subsidence of all acute obstructive symptoms; then, if found inoperable, either a short-circuit or a permanent colostomy in some site less objectionable than the caecum may be practicable, the temporary caecostomy being allowed to close. It is agreeably surprising how frequently growths which at first appear to be too fixed for radical removal can with steady perseverance be ultimately mobilized and excised—indeed, local fixity is but rarely a contraindication to radical operation. Should the cause of the obstruction prove to be other than growth, various procedures may be requisite, such as division of constricting bands, the untwisting of a volvulus combined with its fixation by caecostomy or sigmoidostomy, according to whether the caecum or sigmoid is concerned, or, if the volvulus be already gangrenous, its immediate resection with drainage of both ends of the bowel by Paul's tubes.

In the most desperate cases of this group no attempt to find the obstruction should be made. Under local anaesthesia the caecum is exposed through a right "gridiron" incision, and, if found distended, is immediately opened ("blind" caecostomy); if collapsed, the first distended coil of ileum that presents is opened and drained ("blind" enterostomy). In the latter event we deliberately take the risk of leaving a strangulated knuckle of bowel to later perforate and cause death from peritonitis, of opening the small intestine so high up that death from inanition is probable, or of overlooking some very easily removable cause of obstruction such as an impacted gall stone. Our justification is that occasionally a life is saved against which any further "interference" would have turned the scale, although such will almost certainly be required later, should the patient survive.

GROUP II.

If the obstruction can be located to the colon but its actual site remains undetermined, then, provided external hernia and intussusception can be excluded, there is, as shown by the Manchester Royal Infirmary statistics, a 9 to 1 chance of the cause being a malignant growth, and a 6.5 to 1 chance of its being situated on the left side. In the very severe cases of this group I think it will be generally agreed that "blind" caecostomy under local anaesthesia is the proper procedure. On the other hand, in slight

degrees of obstruction, where there may be merely a temporary plugging of the lumen of the growth by a faecal mass, or a transient oedema of its wall, and where evidences of toxic absorption are wanting, there is a reasonable chance that with repeated enemata, etc., the obstruction may pass away, allowing a radical exploration to be made at a later date. The danger of thus temporizing is that of gangrene and perforation of the caecum, this portion of the colon being most affected by the increased intestinal tension quite irrespective of the site of the obstruction. Any localized tenderness over the caecum is, therefore, a strong contraindication to temporizing and demands operative relief of the obstruction.

Between these two extremes comes the largest class, where, although there is definite colonic obstruction, the general condition of the patient is not so grave but that there is a reasonable prospect of his being able to withstand a paramedian exploration to ascertain the site and nature of the obstruction; the question we have to decide is whether in these cases we should commence the operation with a paramedian exploration or content ourselves with a "blind" caecostomy. The advantages of the latter are: (1) It can be performed rapidly, under local anaesthesia, and with the minimum of shock—certainly very much less than that necessitated by a preliminary exploratory laparotomy followed by caecostomy or colostomy. (2) There is no interference with the growth and no new adhesions are formed. (3) The caecostomy opening is as far removed from the area of any further operation as any artificial anus can ever be. (4) It forms a good safety valve during any subsequent operation of resection, giving rest to the sutured bowel and minimizing the risk of leakage at the line of suture. (5) When not further required it often closes spontaneously on leaving out the tube—particularly if performed by one of the valvular methods—and in any case can be very readily closed by suture, with repair of the abdominal wall. On the other hand, an exploration sufficient to locate the obstruction, to disclose its nature, and to enable one to form an opinion of any value as to its operability in the future is always a difficult procedure in a distended abdomen—coils are liable to escape and may be hard to replace, and in the process of doing so the bowel wall may split. This risk may certainly be lessened by plunging a trocar into the caecum immediately it presents and allowing sufficient gas to escape to relieve tension; but this expends time and must increase the shock to a patient already toxaemic. Moreover, the site and nature of the obstruction are not always discovered—I have known a growth of the splenic flexure in an obese patient to be entirely overlooked—so that the caecostomy which is then performed is still "blind," and the patient has gained no advantage to compensate for the increased risks of the preliminary exploration.

To my mind, the strongest argument that can be urged against "blind" caecostomy is the fear that one may be leaving unrelieved a portion of bowel with its circulation obstructed—volvulus or internal strangulation—so that although death from acute ileus is averted, perforative peritonitis will later inevitably result. What are the chances of this happening? In the Manchester Royal Infirmary statistics, of 199 cases of acute colonic obstruction 24 owned some cause other than growth; of these, 9 were strangulated external hernia and would not be overlooked; 2 cases of ileo-caecal tuberculosis and 1 of sigmoid diverticulitis involved no risk to the circulation; of the 5 cases of volvulus the 2 involving the caecum would have been recognized on exposing the caecum; 2 of the 3 cases of volvulus of the sigmoid were not suspected prior to operation and might have been missed; of the 7 cases of adhesions, in 1 only was there definite strangulation of bowel. Thus "blind" caecostomy might, at the most, have resulted in overlooking gangrenous intestine in 3 out of 199 cases, or 1.5 per cent. I think even the most optimistic advocate of preliminary exploratory laparotomy, necessitating, as it does, a general (or spinal) anaesthetic, must admit that it would add more than 1.5 per cent. to the mortality.

The advantage usually urged in favour of preliminary exploration is that valuable information is thereby obtained as to the site and nature of the obstruction, and, if it is a growth, as to its local fixity, the extent of glandular involvement, and the presence of secondary deposits—all of which remain an unknown quantity with "blind" caecostomy. Even when obtained, however, this knowledge is seldom acted upon at the time—it is for future guidance. Now, admitting that such knowledge is not only highly desirable but absolutely essential before the final disposition of the case can be decided, why seek to obtain that which it is not immediately necessary to possess, at a time when the patient is in the throes of acute obstruction? Surely it is far better acquired when caecostomy has caused all urgency to pass away, when the abdomen has become flaccid, and when the site of the obstruction can often be determined beforehand by a careful physical examination, by sigmoidoscopy, or by radiography after a barium enema. Even if it is still undetermined before the second operation, there is a 6.5 to 1 chance of its being on the left side, so that a left paramedian incision will give safely all the information desired, and can be immediately followed by the requisite therapeutic measure—resection, short-circuiting, or artificial anus elsewhere than the caecum. Should it prove that such can be better performed through some other incision, the left paramedian incision can be readily closed and a fresh one adopted.

It may be argued that the information acquired at a preliminary exploration may be such as to there and then negative any future surgical treatment, and so save the patient a second and unnecessary operation, such as he would certainly be submitted to after recovery from a "blind" caecostomy. For instance, it might be considered that the extent of local fixation or the presence of metastases would prevent future resection. I have already referred to the impossibility of deciding the degree of local fixity unless the parts are actually freely exposed. Even metastases do not necessarily negative all further operation—a short-circuit or a "palliative" resection may allow of closure of the caecostomy and the avoidance of an artificial anus, with all its drawbacks, if not for the remainder of life, at any rate for many months. Practically, it is only where an inoperable growth is found to be too low down in the sigmoid for short-circuit to be feasible later that a preliminary exploration, followed, as it would be in this event, by a sigmoidostomy above the growth, would complete all operative procedures at one sitting.

Weighing the arguments for and against, I feel strongly convinced that when, in any given case of acute intestinal obstruction, the site of obstruction can be located to the colon but is not more precisely known, and where there is no special reason to suspect volvulus or internal strangulation, "blind" caecostomy should be performed as the sole immediate procedure.

GROUP III.

Here the actual situation of the colonic obstruction is known: (*a*) usually because a growth has been discovered on rectal examination; (*b*) in others there is a palpable abdominal tumour; (*c*) very exceptionally obstruction has supervened very shortly after a sigmoidoscopic or a radioscopic investigation has disclosed its site.

(*a*) If rectal examination enables us at once to decide that the growth is definitely inoperable on account of local fixation to the bladder, prostate, uterus, or sacrum, the correct procedure is left inguinal colostomy (sigmoidostomy), since with a growth placed so low a future palliative short-circuit is impracticable. Should rectal palpation not contraindicate a future radical operation, I prefer laparotomy through a left paramedian incision of just sufficient extent to permit of manual examination of the extent and fixity of the growth, the degree of glandular infection, and the presence of metastases in the liver and peritoneum; the operation is concluded by fixing a loop of the sigmoid into the wound and opening it either at once, tying in a Paul's tube, or a few hours later, according to

the severity of the obstruction. In the most severe cases I perform a "gridiron" sigmoidostomy, as the sole procedure, without any examination of the growth or liver from within.

(*b*) and (*c*) Here the growth is too highly situated to be felt per rectum, so that we cannot, prior to its exposure by laparotomy, exclude the possibility, should it prove inoperable, of there being a sufficient and readily accessible length of bowel distal to it to permit of a short-circuit operation and thus avoid a permanent artificial anus. In these cases, therefore, I prefer caecostomy for the immediate relief of obstruction, so leaving the field clear for a later exploratory laparotomy (right or left paramedian according to the known situation of the growth), when either resection, short-circuit, exclusion, sigmoidostomy, or transverse colostomy may be feasible, in this order of preference; if none are practicable the incision is closed and the caecostomy left as the permanent condition, though for reasons already stated every effort should be made to avoid this.

Space does not permit me to consider technical details of the various operative measures alluded to, now for the most part standardized, nor to emphasize the extreme importance of the pre- and post-operative management of the case.[1] Though I have laid stress upon what I believe to be the correct principles in the treatment of colonic obstruction once it has developed, yet it is to the earlier recognition of its most frequent cause—malignant growth—prior to the onset of this very serious complication, that our attention in the future should be increasingly attracted.

DISCUSSION.

Mr. SEYMOUR BARLING (Birmingham) said that apart from such a special condition as volvulus, obstruction of the colon was rarely of that acute nature seen in the higher parts of the alimentary canal. It was true that occasionally a colon, that has been narrowed insidiously, became suddenly obstructed in its lumen, yet in the majority of cases the obstruction was subacute or chronic in its initial course. During the period of this partial obstruction such disturbances of function as pain, flatulence, and constipation might occur and be of assistance in arriving at a diagnosis. Frequently, however, no treatment was sought until vomiting and distension indicated the terminal stages of obstruction. Obstruction was much more common in the distal than in the proximal colon, for not only were growths and inflammations more common in that portion of the bowel, but the more solid nature of the bowel contents favoured obstruction. In cases of obstruction of long standing the hypertrophied and dilated colon proximal to the obstruction became filled with an inspissated mass of faeces, a condition most unfavourable to operative treatment of any description.

No one method of treatment was applicable to all the diverse conditions that might be met with in the group of cases which was being discussed. Consideration had to be paid to the site of the obstruction, to the condition of the patient, whether he was dying in the last stages of a chronic obstruction that had become acute, or whether obstruction was partial and early, and, finally, whether the relief to obstruction was a permanent measure, or the first stage, preparatory to the removal of the affected segment of bowel.

Caecostomy was undoubtedly the method of choice in patients who were the worst operative risks of all, the distended patient who had been vomiting for some days. In such cases, when diagnosis was certain, the caecum could be opened under local anaesthetic with the minimum of risk, and such opening was sufficient to tide the patient over the condition of toxaemia which constituted his greatest danger. Moreover, it relieved obstruction in whatever part of the colon it was arising, with the exception of the occasional growth at the ileo-caecal valve. This operation was a life-saving measures, for if these patients were submitted to laparotomy, partly exploratory and partly for performing a colotomy, a very large percentage died. If by means of a caecostomy the patient was carried over the immediate dangers of obstruction, at the end of ten days or so, distension having disappeared, laparotomy might be performed, to determine whether the obstruction was removable or whether a permanent colotomy was necessary.

Should excision be possible it might then be performed, the caecostomy forming a useful safety valve to protect the line of suture from undue stress before it had consolidated. Caecostomy undoubtedly had disadvantages—performed in the way indicated no idea was gained as to the nature or exact situation of the obstruction, or of the possibility or otherwise of future excision. Furthermore, although it relieved distension and permitted the small bowel to drain and thus lessened the toxaemia of the patient, it did not, like colotomy, remove the inspissated contents impacted in the colon between the caecum and the growth. This colon often remained dilated, filled with faeces, and in a condition most unfavourable for future excision if such was feasible.

For the performance of caecostomy in the way indicated the diagnosis had to be sufficiently exact to permit one to state that the caecum was dilated, and that its opening would give relief. Not infrequently this was impossible, and when the diagnosis was in doubt the abdomen had to be opened to establish an exact diagnosis. In the presence of obstruction this would always be attended by considerable risk, and this would be little influenced whether a caecostomy or a colotomy was performed. In the presence of an irremovable obstruction an immediate colotomy or lateral anastomosis was best, as also in cases in which the hypertrophied colon was packed tight with faeces between the caecum and the growth, caecostomy being reserved for cases in which excision seemed feasible and those in which the colon was distended by gas rather than inspissated faeces. Accurate pre-operative diagnosis was therefore essential, and clinical history and examination, *x* rays and the sigmoidoscope might all be helpful in establishing this. Of the clinical signs, perhaps the most helpful was the presence of great distension of the caecum. Of the value of the bismuth enema in establishing the presence and site of an obstruction it was unnecessary to speak, but there was another radiographic method, which was not so well known, that was worthy of mention. If the patient was able to stand up to the screen for a few seconds, an inspection of the abdomen under the rays might give a very striking picture of a distended colonic loop, reaching from the caecum to the site of obstruction. Such a loop, being filled with gas, was seen to be highly luminous against the darker background. In such circumstances Mr. Barling had seen a pool of fluid in the caecum with a gas-filled colonic loop passing across the abdomen to a second pool of liquid faeces lying above the growth obstructing the sigmoid. This formed an unforgetable picture and one affording accurate data on which to perform a caecostomy with the minimum amount of disturbance. In cases of obstruction of the proximal colon in which the obstruction was irremovable, ileo-sigmoidostomy might advantageously be performed. When that was done it was advisable to divide the ileum immediately distal to the anastomosis, otherwise there was a great tendency for the faecal stream to continue its old route and not to use the short-circuit.

Mr. A. B. MITCHELL (Belfast) said that the cases of colonic obstruction were among the most difficult of all surgical problems. The greater their experience the more conservative surgeons became. The enthusiasm and desire for a complete operation, so characteristic of their earlier surgical work, was highly dangerous. It was their misfortune if their first operation of this kind was a success, as it was certain to lead to future fatalities. The mere opening of these cases of acute obstruction, with the necessary handling and contusion of the intestine, was a dangerous operation, likely to result in a rapid increase of the toxaemia. In the acute case the less the surgeon did the better; Mr. Mitchell was all in favour of a rapid caecostomy under local anaesthesia. In milder degrees of obstruction, if the conclusion had been reached that future excision was impracticable, then a lateral anastomosis was the best procedure. If a permanent colostomy had to be performed,

[1] See an excellent paper by E. R. Flint, BRITISH MEDICAL JOURNAL, May 21st, 1921.

then the best method was to divide the colon, close the lower end and drop it into the abdominal cavity, and then bring the upper end, still closed, obliquely through the muscles. This would give an artificial anus, admitting of a wonderful degree of comfort. It was well to recall that while new growths were by far the most likely cause of obstruction, they might be very closely simulated by syphilis, which might give rise to a tumour-like mass clinically indistinguishable from malignant disease.

Mr. H. W. CARSON (London) said that he had analysed all the cases of colon obstruction in his practice during a term of twelve years. They amounted to 79 cases, excluding the rectum and intussusceptions. All of these were cancers except 5 cases of diverticulitis and 2 cases of ileo-caecal tuberculosis. He had had no case of volvulus in this series. In many respects they bore out Mr. Burgess's conclusions. Fifty-four per cent. were in the pelvic or iliac colon, 19 per cent. in the caecum or ascending colon, 14 per cent. in the descending colon, 9 per cent. in the transverse colon, and 4 per cent. in the splenic flexure. In 36 cases there was obstruction, or 45.6 per cent., and the order of frequency was—splenic flexure, 66 per cent.; descending colon, 65 per cent.; pelvic and iliac colon, 51 per cent. Only 3 cases were obstructed in the caecum and ascending colon and all of these were affections of the ileo-caecal junction. Obstruction occurred in the right colon—the caecum, ascending colon, hepatic flexure, and proximal half of transverse colon—in 5 of 22 cases, or 22.8 per cent., as compared with 31 of 57 cases, or 54.4 per cent., in the left colon. In a previous series, which partly overlapped this one, reported to the Medical Society of London in December, 1920 (*Medical Society of London Trans.*, vol. xliv, p. 110), he could only attempt a radical cure in 35 per cent. In the last three years he had had better luck and had brought the operability for radical cure up to 52 per cent. for this series. He thought it could be agreed that every case of cancer of the colon should be treated before obstruction occurred, and though that was an ideal and perhaps unattainable, he was not satisfied with the present incidence of obstruction of between 35 per cent. and 50 per cent., especially as it added 20 per cent. at least to the mortality. Sir Berkeley Moynihan, at the Medical Society of London in December, 1920, said that a discussion on cancer of the colon ought to be opened by a general practitioner who had the chance of seeing these cases early. In order to prevent obstruction supervening they must educate the public to consult their doctor earlier and they must also expect the patient's doctor to suspect cancer of the colon in any middle-aged patient who complained of the cardinal symptoms so excellently described by Mr. Burgess and to treat these patients on medical lines only after the possibility of cancer had been excluded. That raised the question of an exploratory laparotomy if the modern methods of diagnosis failed to exclude cancer as the cause of the symptoms.

There were three types of colonic obstruction due to stricture. First there was partial obstruction, a type which gave rise to the cardinal symptoms of the disease; second was an acute obstruction following a partial obstruction; and third there was the acute obstruction occurring as the first recognized sign. Each of these required different consideration. Partial obstruction was not associated with grave toxaemia, the intestine was not in bad condition, and a planned operation, perhaps in two stages, was possible. Acute obstruction, following on a long-standing partial obstruction, was associated with toxaemia, and also with deterioration of the intestine above the obstruction, particularly marked in the caecum, which was often oedematous, ulcerated, and liable to burst. Acute obstruction occurring as the first recognized sign was but little associated with toxaemia and the intestine above the obstruction was in a more healthy condition. A certain number of these—which might be called unexpected—obstructions were due to oedema of the mucosa at the constriction or even to blocking of the narrowed part by a faecal mass, and practically always occurred low down in the left colon. Immediate operation was not demanded in this last class and the obstruction could often be overcome by giving no food by the mouth, by the administration of morphine, and by injection of oil and soap enemata. Of course, the closest watch had to be kept on these cases, especially for evidence of toxic absorption, best seen perhaps in the tongue, and also for hyperdistension of the caecum. The real difficulty lay in the cases of acute obstruction supervening on a long-continued partial obstruction. Operation was urgently needed and the question was, what was best to be done? They must exclude all idea of doing a radical cure in these cases, except, perhaps, in favourable cases of ileo-caecal or ascending colon obstruction. He had done several one-stage block resections in such cases with success, and Mr. Burgess in his 9 cases of immediate resection had 2 of the caecum, both recovering. It was probable that even in these cases a two-stage operation was wiser. But in the ordinary case of left-sided colon growth they must be content to relieve the obstruction. Mr. Burgess had raised the question of a blind caecostomy. Mr. Carson did not like it, and for several reasons. First, it was not so easy to differentiate between small and large intestine obstruction. He agreed that they ought to do it, but he could own to having made mistakes. He had even diagnosed as obstruction due to growth of the pelvic colon a case of general peritoneal carcinomatosis secondary to cancer of the stomach, a plaque in Douglas's pouch misleading him on rectal examination. He did not much like Mr. Burgess's 9 to 1 chances. It may be true that a certain condition was present in 90 cases in 100, but it did not follow that it was present in the individual case under notice. Second, there was the danger of overlooking some condition, such as volvulus of the sigmoid, sufficiently rare as it was, which would be fatal if not treated locally. Third, there was the danger of a double obstruction, as occurred in some cases of left colon growth which had involved a coil of small intestine. Fourth, there was the risk of being left with an undesirable caecostomy in an inoperable case which would have been better short-circuited—for example, a splenic or descending colon obstruction. And fifth, there was the danger of having to deal with a caecum in such a bad condition that manipulation might cause faecal extravasation. This particularly referred to long-standing obstruction with acute symptoms supervening. He liked to see what he had to deal with, and particularly to be sure if the case was a possible one for radical cure. If there was a chance of a subsequent resection he was all in favour of a temporary caecostomy, which was the best thing to do. It relieved the obstruction and was of real value after the radical operation, as it prevented distension above the suture line. He did not like the Mikulicz operation, as he thought it was unsound from the block resection point of view. If there was no chance of a subsequent radical cure he thought a caecostomy should be avoided if possible. In these cases, if the obstruction was low down an inguinal or even a transverse colostomy was better. If the obstruction was higher up, some form of short-circuit was generally possible, not a unilateral exclusion, but a simple lateral anastomosis. Mr. Burgess's success with lateral anastomosis was very gratifying—3 deaths only in 11 cases and one of those the very difficult descending colon-sigmoid anastomosis. There was one point about these lateral anastomoses which wanted emphasizing. Every effort should be made to avoid the long blind end. For instance, a caeco-sigmoidostomy was not an ideal operation in inoperable transverse colon growths, nor was an ileo-sigmoidostomy in a splenic flexure growth. Of course, these short-circuits were meant to meet the emergency and in such a case, for instance, an ileo-transverse colostomy for hepatic flexure growth must be supplemented by a drainage of the section between the growth and the ileo-caecal valve; but this might be done after the acute symptoms had subsided. To sum up, Mr. Carson said that the treatment of colonic obstruction was fairly well standardized, but greater efforts should be made by propaganda and the training of students to diagnose colon growths early and thus anticipate the onset of obstruction.

Mr. J. P. LOCKHART-MUMMERY (London) observed that the figures Mr. Burgess produced showed that the percentage of mortality from acute obstruction of the colon, excluding intussusception, was 32.16 per cent. He thought

that these figures would compare quite favourably with other hospitals dealing with large districts where cases are often seen almost *in extremis*. On the other hand, he thought they could not question that a 32 per cent. mortality from acute obstruction of the colon was far from ideal. It was a very high mortality from any one condition, and when they saw a mortality which amounted to nearly one death in three cases it behoved them to go very carefully over the ground and see in what way they might be able to bring down this mortality to what might be considered a reasonable figure. The high mortality was to a large extent due, he felt sure, to the fact that so many of these cases did not reach the surgeon's hands in the early stages. This cause, however, was not under their control, and they had to deal with facts as they were and not as they might be. No doubt in time, and with improved arrangements for removing patients to the hospital, considerable improvement would take place, due to this fact alone; but in the meantime they should do everything they could to reduce the risks of the operation. One of the greatest dangers of operations in cases of acute obstruction was the anaesthetic. His own belief was that an inhalation anaesthetic in the case of acute obstruction was wrong, and that the surgeon should operate on all such cases either under local anaesthesia, regional anaesthesia, or spinal anaesthesia. He did not think that a patient with acute obstruction should ever be given an inhalation anaesthetic, and was persuaded that this alone would do a very great deal to reduce the mortality from operations for internal obstruction. There was hardly any other class of case in which an inhalation anaesthetic was as dangerous as in acute obstruction. Vomiting of faecal matter from the overloaded intestinal canal was very liable to occur, and even when the patient was not actually drowned on the operating table, death from septic pneumonia in the course of a day or so was very common. He believed such anaesthesia should be discarded. The other great factor in reducing the mortality had already been referred to by Mr. Burgess—namely, blind caecostomy. He was very strongly of the belief that in all cases of acute obstruction the proper treatment during the acute stage was a blind caecostomy, done under local anaesthesia with a rubber tube by the method described by him in the *Lancet* of November 25th, 1922. This was a simple operation, which could be easily performed under a local anaesthetic practically without any risk. It rapidly relieved the obstruction and got the patient over the acute and dangerous stage. A few days later the abdomen might be opened under a spinal anaesthetic and the cause of the obstruction searched for and dealt with in the most favourable circumstances. This procedure, as he had already pointed out, was much more rational than an exploratory laparotomy when a patient was suffering from acute obstruction terminating, as it frequently must, with a caecostomy. He felt very strongly that to perform an exploratory operation on any patient with acute obstruction was wrong, more particularly as all surgeons now agreed that primary resection when obstruction was present should never be performed. If they granted that, and he thought all surgeons were now agreed upon it, then surely there was no point in exploratory laparotomy. Mr. Burgess had very carefully summed up the arguments for and against this procedure, his own opinion being strongly in favour of caecostomy only in the acute stage. As he pointed out, the only real danger was that one might miss a case of acute volvulus. But as he had shown, even if they assumed that that were so, the mortality from acute volvulus, which might be prevented by exploratory laparotomy, was not more than 1.5 per cent., whereas if blind caecostomy were performed in all cases the total mortality would probably be reduced to somewhere in the neighbourhood of 10 per cent. or less. Cases of volvulus could generally be detected. The symptoms were more or less characteristic and there was nearly always a past history which made one suspicious. The advantages of the tubular method of performing caecostomy were that it involved no mess, the dressings did not even require changing for several days after the operation, and the contents of the caecum were siphoned out into a pail under the bed. The tube usually separated on about the ninth day, and the opening closed immediately without any trouble, assuming, of course, that the obstruction beyond had already been removed. Personally he always performed a caecostomy in all cases of acute obstruction by that method and also in all cases of anastomosis of the colon of whatever kind. He was convinced that it had enormously reduced the risk of that operation, and that if it became the universal practice to perform blind caecostomy under local or spinal anaesthesia in all cases of obstruction of the colon, they would replace the 32 per cent. mortality with one of under 10 per cent. He had found that temporary caecostomy in all cases of resection of the colon, whether in part or in whole, had very greatly reduced the mortality and risks of such operations.

With regard to Group I, where they could tell whether the obstruction was in the ileum or the colon, he agreed with Mr. Burgess that it should generally be possible to distinguish between an obstruction of the colon and the large intestine. If no such distinction could be drawn an exploratory laparotomy would still seem necessary. An incision, however, might be made over the right side so that if the caecum was found distended the caecostomy could be done immediately without further exploration. They all knew how dangerous an operation an exploratory operation was in cases of acute obstruction, and they should not be tempted to explore for a cause when they could be sure that they could relieve the danger without knowing where the cause of the trouble rested. With regard to Group II, where they could locate the obstruction to the colon, but its situation therein was not known, he thought blind caecostomy should be performed without hesitation, and the exploration postponed until the patient had recovered from the acute symptoms, which should be a matter of a few days. In Group III, where the site of obstruction in the colon could be definitely ascertained, he still believed that blind caecostomy was the proper operation, even when they were certain that an inoperable growth had to be dealt with. Tubular caecostomy was better and gave much better results than an immediate colostomy. After the patient had recovered from the obstruction a carefully planned colostomy could be performed and the caecostomy opening allowed to close. Moreover, it was very difficult to say whether a growth was absolutely inoperable when a patient was suffering from obstruction. He observed that Mr. Burgess spoke of left inguinal colostomy. Personally he had discarded left inguinal colostomy completely and preferred hypergastric colostomy through the centre of the left rectus muscle, with the upper end of the incision level with the umbilicus. That form of colostomy had proved far more satisfactory than inguinal colostomy, both from the point of view of absence of prolapse afterwards and also from control over the opening. He was very glad that that subject had been ventilated, as he believed it to be of the utmost importance, as he had for some time felt that the mortality from obstruction of the colon was too high.

The duty of a surgeon when called in to a case of acute obstruction was not to attempt an ideal operation but to do what was necessary to save the patient with the minimum of risk, and bearing in mind that his duty was to relieve the obstruction which was threatening the patient's life. The cause of the obstruction was for the time being of quite minor importance. That attitude was, it seemed to him, on a par with that which applied in cases of acute peritonitis. In the old days they used to search carefully for the cause, but it was soon found that the proper procedure was to drain the abdomen, treating it, in fact, as they would any other abscess, and to leave the cause of the peritonitis to be dealt with at a more opportune time. He particularly wished to stress the importance of local anaesthesia in cases of obstruction of the colon. English surgeons had such excellent anaesthetists always available that he thought they had failed to appreciate the value of local and regional anaesthesia, or to make themselves fully acquainted with the methods. Local or regional anaesthesia was admittedly tiresome at first, but with practice it soon became quite simple, and except in very stout persons presented no real or serious difficulties. It enabled old and feeble patients to be operated

upon with an absence of danger that had to be experienced to be realized. His own belief was that inhalation anaesthesia should not be used in old people or in persons suffering from acute abdominal conditions.

Professor CHARLES A. PANNETT (London) said that the knowledge that their treatment of any disease was very remotely removed from finality was a constant impetus to review beliefs as to the propriety, usefulness, and efficacy of any particular methods they were using. In the treatment of acute obstruction of the colon, the procedure to which he had given the name of "blind" caecostomy had proved a very satisfactory one in numerous cases; there was very much to be said in its favour, its value was vouched for by some of the greatest amongst abdominal surgeons, but was it not possible that its advantages were rated too highly, and had not its very real drawbacks been rather thrust into the background? If the abdominal organs were immured in transparent walls, it would be much easier to choose their plan of campaign; but when confronted with an extremely ill, tensely distended patient, who had reached a stage of his disease when he was too listless and apathetic for them to be able to place implicit reliance upon his replies to inquiries, Professor Pannett confessed that sometimes his diagnosis of large bowel obstruction was rather a guess than an opinion based upon knowledge. That was the primary difficulty. Quite recently, however, marvellous powers of recovery these patients have. After many days' obstruction, with distension so extreme that the loss of the support of the abdominal wall brought about by its incision allowed the caecum to split from internal pressure, he had seen patients recover and pass successfully through an excision operation. In these very late cases, it must be a procedure of great skill to pull an area of caecal wall through a small gridiron incision without rupture, for the viscus was as tense as a rubber balloon. Through a paramedian incision the distension could be immediately diminished by the use of a hollow needle and under conditions of free access, with little danger of infection. It was not necessary to allow coils of intestine to protrude on to the surface of the abdomen—the proper place for the abdominal viscera was within the peritoneal cavity. Neither was the trauma of the gentle insinuation of the exploring hand of significance in comparison with the worst of all shock-producing stimuli, the overstretching of the bowel wall which was already present. The subsequent suture of the abdominal wall was not so difficult as they might suppose, for at that stage evacuation through the caecostomy would have considerably reduced the distension. It was facilitated by using the three-bladed forceps which he devised some years ago. He had never seen adhesions from around the growth as a result of manipulation, unless it lay immediately under the wound, and then they had not been serious.

FIG. 1.

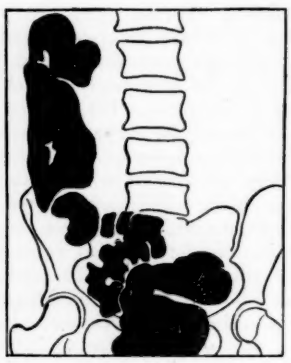


FIG. 2.

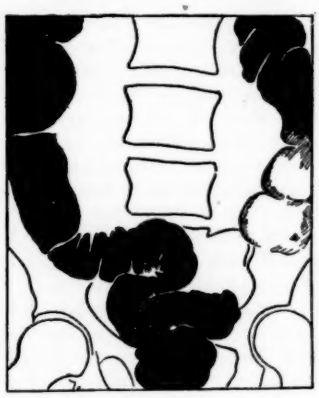


FIG. 3.

FIG. 4.

x-ray investigations in patients suffering from acute intestinal obstruction had shown that it was sometimes possible to determine the site of the obstruction beforehand, without giving barium, if it were in the large intestine. For the bowel distended with gas above the obstruction was recognizable by its characteristic sacculation, whilst the contracted bowel below gave no obvious appearance on the plate. It was also asserted that, after washing out the stomach, a little barium cream, given to a patient suffering from acute obstruction of the small intestine, would rapidly be propelled to the site of the block, where it would be held up sufficiently long to be demonstrated on the *x*-ray screen or plate. That method of investigation was worth trying. If it were established on a firm basis it would make all the difference to the attitude with which they approached these doubtful cases, for simple caecostomy could only be performed with equanimity when the diagnosis was a certainty. At St. Mary's Hospital, of the 47 cases of carcinoma of the colon (excluding the rectum) treated during the previous three years, not one death occurred as the immediate result of caecostomy combined with abdominal exploration, and every patient with acute obstruction was submitted to a primary exploration. So that this procedure did not appear to be a very fatal one. There was, however, a death after primary exploration combined with colostomy, which operation was very much the same. This occurred in a feeble woman of 67; there were very extensive secondary growths in the abdomen, the primary one being in the splenic flexure. Transverse colostomy was performed; the patient was not acutely obstructed at the time, but suffered from persistent bloody diarrhoea. When they looked at the disease they could not but be struck by the

To consider another aspect, they found that of the cases of carcinoma of the colon coming to St. Mary's, only in a little more than one-third of the total number did conditions allow of excision of the growth. Of the remaining two-thirds, more than one-half had to pass the remainder of ther lives with a permanent faecal fistula, a short-circuiting operation not being possible. Now these unfortunates, with but a small residue of life, had to suffer the distress of another abdominal operation, if a blind caecostomy were done. For the greatest comfort the fistula should be made as close to the growth as possible, and there also it would drain the best. A primary colostomy in irremovable growths was more effective than caecostomy, and a second operation was eliminated. When a "blind" caecostomy had been performed, they usually tried to ascertain the exact site of obstruction by means of sigmoidoscopy or the opaque enema. It was often not possible to see the growth through the sigmoidoscope, even when it was in the sigmoid, for adhesions of the growth and adjacent bowel might prevent distension and the straightening out necessary to pass the instrument. The opaque enema also did not always give them unequivocal information. In 1911 he operated upon a man with acute obstruction; the caecum and transverse colon were distended, and he made what he thought now was the erroneous observation that the sigmoid was not. Without being able to feel it in that area, he made the deduction that there was a growth at the splenic flexure. The opaque enema was to be seen in Figure 1. It supported the previous diagnosis. At the subsequent operation there was no growth in this region, but there was an irremovable carcinoma of the sigmoid. This spasm of the splenic flexure he had seen

other cases of carcinoma of the colon. A patient with chronic obstruction was given an opaque enema. The radiographer reported that even after considerably increasing the pressure he could not make the opaque fluid pass the splenic flexure. A confirmatory examination was made, at which Professor Pannett was present. The skiagram was shown in Figure 2. He made the oblique incision recommended by Rutherford Morison, to explore the splenic flexure. Again there was no growth in this situation, but one in the sigmoid. A man was in hospital suspected of having a growth of the colon. An opaque enema was given. The picture was shown in Figure 3. It was reported to give no evidence of stricture of the colon. Four days later he got acutely obstructed and, when opened, there was found a narrow annular growth of the sigmoid. Obviously there the stricture was masked by other coils in front of it. Lastly, Figure 4 showed the result of radiographing an old lady who had a "blind" caecostomy performed by a practitioner, and who was sent to Professor Pannett after a considerable interval of time had elapsed. There clearly was a growth in the lower colon. To his surprise, at the operation the primary growth was found in the transverse colon, the growth in the sigmoid being a secondary implantation. A Paul's operation in the transverse colon, leaving the two ends permanently open, allowed the caecostomy to heal and gave much relief. It might have been done at the first. Their experience at St. Mary's Hospital was that the mortality after resection at the second stage was quite a serious one (just over 16 per cent.) and that it was a much graver procedure than the primary exploration. Therefore anything which lessened the gravity of it was desirable. The exact knowledge of the site of the growth to be removed might do that by avoiding a second abdominal incision. The splenic flexure could not usually be excised through the middle line, and any incision there made it rather difficult to remove the hepatic flexure. The abdomen, however, must always be opened close to the middle line if they were uncertain of the situation of the growth. On the whole, he thought the greatest good was done by abandoning a "blind" caecostomy, unless by rectal or abdominal palpation the exact situation of the growth would be determined beforehand.

Mr. J. W. GEARY GRANT (Cardiff) said he had been greatly interested in Mr. Burgess's paper. Every surgeon, of course, agreed that a primary resection with end-to-end union was a totally unjustifiable procedure. The Mikulicz-Paul operation had more to be said in its favour, but the chief objection was that it did not permit of an extensive removal of the lymphatic area. He was interested to hear Mr. Lockhart-Mummery's description of his method of caecostomy, which he would certainly try in the next suitable case, for he was bound to say that his own experience of caecostomy had been most unfavourable. In two cases where he tied in a small Paul's tube leakage took place, with excessive suppuration and sloughing of the abdominal wall. Caecostomy did not appear to him such a simple procedure as it had been represented to be, and he gathered that Mr. Pannett was somewhat of the same opinion. The whole point was that while a Witzell gastrostomy, which seemed to be the principle of Mr. Mummery's operation, was safe and easy, the gastric contents being nearly aseptic, in performing a similar operation on the caecum, in the class of patient he was accustomed to deal with, in a patient with complete obstruction, with a thin-walled, ballooned, and friable caecum on the point of rupture, with intensely toxic, infective, and fluid contents, a leak was likely to be attended with serious consequences. He suggested that appendicostomy, a safer procedure, would relieve the gaseous distension which was the chief factor in these cases. He had not seen an exploratory laparotomy, if carefully carried out—of course not letting intestine escape—followed by colostomy and immediate opening and tying in a Paul's tube, to be attended with any marked increase of shock, which was due to stretching of the gut and absorption of toxins. What he had been struck with was the great amelioration of symptoms a few hours after. In obstruction from the splenic flexure to the recto-sigmoid junction, he made a transverse colostomy and completely diverted the faeces, thus freeing the bowel at the future site of resection and anastomosis from gross contamination, which he maintained could not be done by caecostomy. A fortnight later he carried out the excision, and several weeks later closed the colostomy by the intraperitoneal method. In a growth proximal to the splenic flexure a caecostomy had to be performed.

Mr. C. P. CHILDE (Portsmouth) remarked that there was a difference of opinion as to the proper course to pursue in any given case of acute obstruction due to colonic disease. It was of great advantage to get rid of the obstruction. Opening the bowel above the obstruction—that was to say, performing caecostomy—meant ultimately three operations, the last being to close the temporary opening. He would care to perform blind caecostomy only if the patient were exceedingly ill and unable to bear anything but the slightest operative interference. If the patient were ill to a less degree he would endeavour to locate the obstruction, as by this means his after-treatment would be on surer grounds, and he would then know what kind of growth he was dealing with and where the growth was situated.

Mr. R. D. MOTHERSOLE (Bolton) was of opinion that there would be general agreement as to the advisability of doing the least serious operation, probably caecostomy, in the worst cases of acute obstruction. But the position of colostomy was more doubtful. In his own practice he had been better satisfied with those cases in which he had done a preliminary colostomy than in those in which he had done a caecostomy. Most surgeons would agree that the mortality of operations for cancer of the rectum was much lessened by putting the diseased bowel out of action by a preliminary colostomy. The same should hold good with regard to other portions of the bowel, and he suggested that the mortality of the operation would be lessened by doing a colostomy as an intermediate operation between the caecostomy for relief of obstruction and the excision of the malignant disease.

Mr. M. MAMOURIAN (Ashton-under-Lyne) said that Mr. Burgess emphasized rightly the value of "blind" caecostomy as a valuable life-saving device. The decision as to whether a patient should be submitted to blind caecostomy or to a preliminary exploratory laparotomy would depend upon the condition of the patient. Where the patient's condition warranted it, exploration of the abdomen, which enabled one to localize and diagnose the obstructing lesion, was the procedure indicated. Mr. Mitchell referred to the method of colostomy by closing the distal segment and bringing the lumen of the proximal loop to the iliac wound. Mr. Mamourian thought it a mistake to close the abdomen and then proceed to make the artificial anus. He found it very helpful to make the colostomy opening by thrusting a pair of blunt scissors from within, cutting on the point and opening them out so as to get an opening big enough to admit two fingers. The fixation of the loop or tube was rendered easy with one hand in the abdomen and the guidance of the eye. By this technique the cauliflower-like protrusion was avoided, and the opening was certainly more valvular than the one made on muscle-splitting lines. Mr. Lockhart-Mummery had referred to his method of caecostomy by the use of a rubber tube. Mr. Mamourian wished to draw attention to another extremely easy method of performing caecostomy or colostomy, by the use of the Murphy button, which he had published about ten years previously. The male half of the button was inserted at the end of a long piece of soft colotomy tubing, which was tied round the collar of the button just as if it were a piece of bowel. A linear purse-string suture was put in the bowel, the incision made, and the other half of the button placed in position. The two halves were pressed together, and thus an hermetically sealed joint was established between bowel wall and tubing. The button took four or five days to separate. It was a quicker, safer, and neater device than the Paul's tube.

Mr. BURGESS, in reply, considered that there had been shown in the discussion a fairly general agreement upon most of the points he had raised, the most debatable

question having proved to be, as he expected it would, the treatment of the Group II cases. He admitted that the "opportunist" view expressed by Professor Pannett, Mr. Childe, and other speakers—that exploratory laparotomy should be the first step in all cases where one considered the patient's general condition sufficiently good to withstand it, and that blind caecostomy should be reserved for the others—seemed at first sight logical and tempting. It was probably the practice of the majority of surgeons at the present time. But the difficulty was to know how much the patient would stand, and if the present high mortality of these cases was to be reduced some change of the present practice must occur. Although, in general terms, he shared the dislike expressed by some of the speakers to any routine procedure, yet in this particular instance he felt convinced that the routine adoption of blind caecostomy would very materially lower the mortality, although earlier diagnosis must remain the most important factor in that connexion. He did not agree with Professor Pannett that an exploratory laparotomy did not add to the risk of caecostomy; it was not easy to show this by figures, but it appeared to him to be axiomatic. He was interested in what Mr. Barling and Professor Pannett had said as to the diagnosis of the site of obstruction by the use of the x rays without bismuth meal or enema. Unfortunately most of the patients in the acute type of obstruction he had been considering were too ill to be sent for even a short radiographic examination. He had not found cleansing of the colon proximal to the obstruction to be so impossible after caecostomy as Mr. Barling suggested. Any faecal matter remaining in it would in any case, as the result of the caecostomy drainage, have been deprived of its acutely toxic properties, and would not prevent restoration of the bowel wall to a healthy state. By repeated flushings of the colon, both through the caecostomy and per anum, he considered that the bowel could be effectively cleansed in from ten to fourteen days. In many cases, after the relief to obstruction by caecostomy, the passage through the obstructing growth became restored, and fluid would pass from the anus to the caecostomy opening. Mr. Mothersole had suggested that it might be advisable, where there was a long length of colon between the caecum and the growth, to perform a second drainage operation—in other words, a colostomy just above the growth—before undertaking the radical extirpation. He did not think this would be necessary if sufficient time and attention were given to careful flushing of the colon.

ARE THE RESULTS OF THE OPERATIVE TREATMENT OF CANCER BETTER THAN TWENTY YEARS AGO?

BY

HERBERT J. PATERSON, C.B.E., M.C.CANTAB., F.R.C.S.,

Senior Surgeon, London Temperance Hospital.

IT is peculiarly appropriate that this question should be discussed at the headquarters of the President of the Association, who has done so much to promote the early recognition and the early treatment of cancer. I imagine that there are few of us who do not feel depressed at the poverty of our success when we reflect how small is the number of cases in which complete freedom from recurrence follows operation for cancer. Yet there is no doubt that during the past quarter of a century surgical technique has been greatly improved, many of the risks of operation have been very materially lessened, and this in spite of the fact that the operations practised for malignant disease have become more extensive and radical. But from the point of view of remote results have we similar cause for satisfaction? I look in vain for any convincing evidence that the proportion of ultimate successes is greater than was the case twenty years ago.

The Registrar-General's returns show that in the year 1921, of each million persons living, 1,215 died of cancer, as compared with 828 per million persons in the year 1900, an increase of nearly 30 per cent. Even granting that cancer is on the increase, and that death certification is more accurate, it is not easy to understand this proportional increase if modern operations have effected the cures which are claimed. A comparison of operative statistics seems to point to the same conclusion. Most of us have had isolated cases of freedom from recurrence for ten or even twenty years, but on the whole the proportion of those free from recurrence after five years appears to be about the same as it was twenty-five years ago. When I was house-surgeon I traced the results of the operations for mammary cancer performed by my chief, the late Mr. Alfred Willett. I found that 42 per cent. of the patients were free from recurrence after three years, and 33 per cent. after five years. In 1902 Mr. T. Bryant published a series of cases showing 50 per cent. free from recurrence after five years, and 32 per cent. alive and well after ten years. It is not without significance that both these surgeons practised what to-day would be considered a very inadequate operation. The axilla was not cleared out as a routine measure, but only when there was evidence that the glands were diseased. It is interesting to compare these figures with those of Halsted, as the result of the more radical operation known by his name. In spite of a more extensive operation his results appear no better than those I have quoted. He reported 46 per cent. of the patients dead within three years, and 41 per cent. alive and free from recurrence after three years. As regards carcinoma of the rectum, Mr. Harrison Cripps was able to report that 42 per cent. of his cases were alive three years after operation, and almost all of them were perineal excisions. Not many of us can show better, if as good, results as these. Unless we can prove our efforts to be more successful we are living in a fool's paradise.

Is there any fault in our technique or method of attack to account for this apparent lack of progress? I would suggest two questions.

First, are we allowing the teaching of pathology to override clinical experience? No one has greater regard for pathological work than myself, but I am inclined to think that some of the conclusions arrived at in recent years have tended to hinder rather than to further progress. Pathologists tell us that cancer cells are scattered far and wide beyond the apparent limits of a growth, and consequently they urge the necessity of wide and extensive excision. Indeed, if we were to accept their conclusions as gospel it would in most cases seem useless to attempt resection of bowel for carcinoma. We know, however, from clinical experience that operations in which the margin of the growth is very close to the line of resection are sometimes followed by a long interval of immunity. The microscopical observations may be accurate, but the inferences drawn therefrom are not necessarily infallible. If it be true that cancer cells extend far beyond the site of the growth, the conclusion is irresistible that the tissues can and often do destroy the isolated cells which are left behind beyond the line of excision. To this extent I submit pathology has led us astray. Our efforts have been directed towards more extensive operations, whereas earlier diagnosis and earlier operation should be our aim.

The second question I would put is this: May it not be the case that in modern surgery the lymphatic glands are attacked too ruthlessly?

Do we fully appreciate the part played by the lymphatic glands in Nature's defence against the spread of carcinoma? If, by operation, all the neighbouring glands are removed, may we not be depriving the patient of his first and main line of defence? There can be no doubt that cancer cells spreading from the primary growth are arrested, at any rate temporarily, in the neighbouring glands. Possibly the glands may be able even to destroy a limited number of cells, when the primary focus has been removed. Most of us have met with cases in which operation for malignant growth of the bowel has been necessarily incomplete, in that glands obviously infiltrated with carcinoma have been left behind, in spite of which the patient has lived ten, twelve, or even more years. It is a fair inference that such patients have remained well not in spite of, but because of the incomplete removal of glands. It is difficult to explain such happenings except by the hypothesis that the cancer cells left behind have been destroyed by the healthy tissue in which they were unwelcome guests.

Dr. G. W. Crile has pointed out that remote visceral metastases are found in less than 1 per cent. of the cases of cancer of the face, neck, and head, and that the disease is almost invariably limited to the extensive collar of lymphatics surrounding the neck. "The collar of lymphatics about the neck form an almost impassable barrier through which cancer rarely penetrates. . . . These facts," continues Crile, "give us the key to our first principle—the removal *en bloc* of the pertinent glands." Surely this argument is thoroughly unsound! If the lymphatic glands form an impassable barrier, surely it is unwise to remove them, at any rate until we have taken away the growth the spread of which it is desired to bar. In this instance I believe pathological observation to be right, but the inference drawn from it by surgeons to be wrong. I suggest, therefore, that this impassable barrier be left for several weeks after the removal of the primary growth. During this period the glands will continue their beneficent work and intercept any cancer cells left behind in the wound, acting indeed as Nature's wound scavengers. Then, when there is no longer need for a barrier, the glands with the intercepted cancer cells may be removed. I have operated for cancer of the tongue by this method in eight instances, five times before the war and on three occasions since. Of the eight patients, one died of bronchopneumonia seven days after operation, one patient is untraced and presumed to be dead, one died fifteen months after operation, and five are alive and well, four of them more than six years after the original operation. Of course, such a small number of cases is by no means conclusive, but compared with earlier experience of operation for cancer of the tongue they are encouraging, for previously I had not known of any patient with cancer of the tongue alive five years after operation. I submit that there is solid reason and justification for an extended trial of this procedure. For the past three years I have adopted a similar method in dealing with cancer of the breast, but it is as yet too early to judge of the results.

In conclusion, I need hardly add that nothing I have said is meant in the slightest degree to discourage operations for cancer, or to underrate their necessity. My plea is for earlier and therefore less extensive operations, and especially operations in two stages whenever practicable—that is, removal of the growth and of the glands at a later period. Let us not be in a hurry to remove Nature's first line of defence.

Among thoughtful surgeons there appears to be a growing feeling of disappointment and dissatisfaction with regard to the treatment of cancer. This is a healthy sign. So long as there is satisfaction and complacency, so long will progress be at a standstill. I think we must recognize that extensive operations in advanced cases confer no benefit, if indeed they do not do harm. Although evidence is lacking that the ultimate results of operation for cancer are better than they were some twenty years ago, I see no grounds for pessimism. The day cannot be very far distant when the cause of cancer will be revealed and we shall stand on surer ground in fighting it. In the meantime, what is needed is a vigorous campaign to impress on the public the supreme importance of early recognition of the disease and operation for its removal at the very earliest stage. In the present state of our knowledge early operation is our only hope, and it is by aiming at this ideal rather than by performing more extensive operations that we may realize our ideals and offer to the victims of this disease a more certain prospect of cure. If such a campaign be conducted with energy it is not too much to expect that a very large proportion of the sufferers can be cured by operative treatment. The fight has been long and arduous, but victory is in sight, for failures are but the preparation of victory.

DISCUSSION.

Mr. C. P. CHILDE (Portsmouth) was inclined to deprecate the tendency to attach importance to statistics. The pith of Mr. Paterson's remarks lay in his last few sentences, in which was advocated a vigorous campaign with the object of impressing on the public the supreme importance of the early recognition of the disease. Mr. Childe said that the technique of the operation for cancer was greatly improved, but unfortunately cases came so late that they were not able to benefit from that technique. The only way to obtain the greatest possible advantage from the improved operative methods was by some sort of campaign to enable the public to recognize cancer in its early stage, or at least to inform the public as to the earliest symptoms. Unless patients were obtained at an early stage it was impossible to take advantage of this technical improvement. It was unfortunate that they took no steps to instruct people as to the early diagnosis of cancer, and he thought that those who were accustomed to visiting the sick, such as nurses, clergymen, teachers, and others, should be instructed in these early symptoms. He thought there was no doubt that the technique was better than twenty or twenty-five years ago. He hoped to demonstrate to them cases which had apparently been hopeless, but which had lived for many years longer than had been expected.

Sir STCLAIR THOMSON (London) said that, to avoid being desultory, he would limit himself to one class of cancer in one organ of the body—namely, intrinsic cancer of the larynx; and, in order to be demonstrative, he would show his results by throwing on the screen the statistics of all his operations. This was not done in order to advocate a statistical claim, but because figures, in tables, were a quick method of bringing out details of ages, duration of cure, relapses, and so forth.

Comparison was a necessary feature of this debate. In order that he might, like Hamlet, invite them to "look on this picture and on this," he must first produce a picture of the surgical treatment of cancer of the larynx at the end of last century. This had been painted for them by Nolan Mackenzie of Baltimore, who, in 1879, was an assistant to Morell Mackenzie in London at the Throat Hospital in Golden Square. He records that in those days the usual treatment for this disease consisted in tracheotomy and subsequent removal, piecemeal, of the growth through the natural passages. Of this performance Nolan Mackenzie wrote as follows: "Of course, there was never a thought of cure. When I look back through the years in which I have seen cancer of the larynx maltreated, and in which I have unconsciously maltreated it myself, I am simply appalled at the retrospection." At that time, forty years ago, Morell Mackenzie himself wrote of the disease in the following words: "As far as the present state of our knowledge extends, the only possible termination of any case of cancer is death, but at the same time the question must always arise as to how long life may last in any particular instance. The usual duration of epithelioma of the larynx appears to be about eighteen months." The early history of the treatment of intrinsic cancer of the larynx by laryngo-fissure was a tragedy. The first eight cases of laryngeal cancer operated on in Europe by laryngo-fissure were carried out by the great surgeon Billroth, in Vienna, between 1870 and 1884. Six died of recurrence, one survived two years and nine months, and the eighth case was lost sight of. What a record! Paul Bruns recorded nineteen cases, of which only two survived a year. With these disasters to daunt them it was no wonder that further efforts to treat laryngeal cancer by laryngo-fissure were discouraged. Morell Mackenzie, in his book in 1880, wrote of it as follows: "It will thus be seen that the results of thyrotomy are extremely unsatisfactory. In some cases the operation was followed by immediate death, in others it could not be completed, and in the remaining cases, with two exceptions only, recurrence followed within a very short time. If the few statistics which have been collected are to be trusted, the average duration of life after the operation is only ten months." It was curious that, even by those who afterwards achieved brilliant results, this very operation was at first condemned as hopeless. Thus, in 1883, Butlin, from the results obtained by other operators, concluded that "the disease is far too deeply seated to admit of removal by so slight an operation." Semon, also, in 1886, on the strength of literary information, formed the opinion that it should not be attempted; Moure, as late as 1891, concluded that thyrotomy "appeared a bad operation in established laryngeal cancer." Still, only a few years later these courageous pioneers returned to the attack. Their renewed efforts were at first disheartening. Semon's death rate with

laryngo-fissure was, in his early cases, 25 per cent. Of Butlin's 9 cases between 1886 and 1890, 3 died of the operation, 3 died of recurrence, and though the other 3 survived, sufficient time had not elapsed to claim a success.

Thirty-three years later what was now the position? Larnygo-fissure was a well established operation and secured lasting cures—some 80 per cent.—which surpassed the results obtainable for cancer in any other internal region of the body. In 60 cases Sir StClair Thomson had only had 3 deaths—one from rupture of the oesophagus from post-anaesthetic vomiting, one from an idiosyncrasy for heroin, and one from morphine. Not one of these cases could be properly called an "operative death." Of his 57 cases, 25 were alive and free from recurrence after three to fourteen years, 8 after one to three years, 4 under one year, so that a total of 37 were alive to-day. Thirteen patients died of other disease without recurrence; of these, 8 had passed the three-year period. These, added to the above 25, would make 33 who, out of 57, had passed the three-year limit. Another chart showed the advanced age of many of the patients. Six were over 70. One operated on at 75 was to-day alive and well at the age of 81. A patient of 80 was operated on successfully. Only 8 patients out of 57 died from local recurrence, and 2 from recurrence in the glands.

Still better results would be obtained as the disease—always indicated by persistent hoarseness—was diagnosed earlier. If cancer was limited to a vocal cord and was operated on with every care, they had in laryngo-fissure an operation which could now be made safe in execution and certain in its results. The operative death rate should be *nil*, a serviceable voice could be promised, and there was every prospect of permanent freedom from recurrence. Therefore, in reply to Mr. Paterson's question as to whether there was any recent improvement in the results of operation for cancer, Sir StClair Thomson asserted that, so far as intrinsic cancer of the larynx was concerned, the reply was most unhesitatingly in the affirmative.

Dr. MAJOR GREENWOOD (London) said that he ventured to intervene in the discussion because one aspect of the general problem before the Section was directly relevant to the work of a Departmental Committee of which he was a member.

It was the duty of the medical statistician to scrutinize closely the rates of mortality from malignant disease chiefly in the hope that, having discovered differences which transcended the possibility of explanation on mere book-keeping lines—that was, as mere errors of record or definition—he might be able to suggest problems for the consideration of both laboratory and field workers. The statistician was not anxious to waste the time of his colleagues in the exploration of mare's nests, and therefore paid especial attention to the data gathered in countries where the level of professional education was high and the statistical system well developed. When both these conditions were fulfilled, it was found that very striking differences of fatal incidence of malignant disease existed. An important example was afforded by the confrontation of the rates of mortality from cancer in England and Wales, in Italy, and in Holland. Details were contained in his note, communicated to the Office International d'Hygiène Publique, "*Différences internationales dans les taux de la mortalité par cancer*" (*Bull. de l'off. intern. d'hyg. pub.*, xiv, 1922, p. 1507), and he wished merely to recall salient features, which were as follows. Although the death rate from cancer as a whole was no lower in Holland than in England and Wales, indeed slightly higher, the death rate from cancer of the breast and female generative organs, making due allowance for differences of age distribution, was almost twice as great in England and Wales as in Holland. For instance, in 1919, taking the Dutch rate as 100 in each case, the figures for England and Wales were: age group 40 to 50—breast 169, generative organs 170; 50 to 65—breast 159, generative organs 184; 65 to 80—breast 203, generative organs 181; over 80—breast 235, generative organs 156. This was a very remarkable contrast and to discover its explanation was obviously a matter well worth consideration. Plainly one ought to deal with possible explanations in order of their *a priori* probability. He thought that the explanation which first suggested itself and would surely be considered worthy of examination by members of the Section was that, for some reason unknown to them, cases of cancer of the breast or uterus came up for examination and surgical treatment at an earlier stage, on the average, in Holland than in this country. Now there was no insuperable difficulty in the way of a comparative study of the surgical experiences of English and Dutch hospitals; in fact, steps had already been taken to effect such a comparison. But the statistician was at once faced by the difficulty of standardizing the experiences of different surgeons. An examination of the literature—his colleague Dr. Janet Lane-Claypon was then making a detailed study of the literature—showed that the data published by various surgeons were far from being of equal value owing to the non-uniformity of the system of recording. Confining himself to the particular case of cancer of the breast and speaking, of course, subject to the correction of experts, it would seem that the method of recording adopted by Professor Halsted, with a slight modification, approximated closest to the requirements of a genuine comparison. One required to have stated with respect to each patient, in addition to her age and marital history—both important items—the finding of the surgeon on examination, which might, he thought, be classified thus: (1) a tumour, neither adherent to skin nor deep structures and no palpable change in the axillary region; (2) as (1), but with palpable glands in the axilla; (3) a tumour adherent either to skin *or* chest wall and with palpable axillary glands; (4) a tumour adherent to *both* skin and chest wall with palpable axillary glands; (5) either of the preceding states together with palpable glands in the supraclavicular area. That grouping did, he suggested, on the average, correspond to an increasing gravity of prognosis. If then it appeared that the proportions of patients at admission to general hospitals of the countries compared and classified in those groups were significantly different, they would have at least *prima facie* evidence that their surmise was correct, that the frequency of resort to early surgical treatment sensibly affected the death rate. Of course they would hope to learn a good deal more than that from properly standardized statistics; they would hope to learn what was the average numerical measure of the advantage derived from operation, but he desired to put the case for standardization at its lowest. Many surgeons believed that at present there was much preventable loss of life owing to the failure of the public to avail themselves of early treatment; nobody there was likely to dissent from that opinion. But when it was a question of inducing the public by some form of propaganda to avail themselves of what could be done, there was much difference of opinion as to what should be said; some thought that the danger of promising more than could be performed was a real danger. He had devoted too many years to the study of medical statistics to be under any illusions as to the infallibility of numerical statements; a piece of statistical reasoning which was entirely fool-proof had not yet been submitted to the world. But he was optimistic enough to believe that a statistical survey of the after-history of operated cases made by surgeons and statisticians working in loyal collaboration would not only yield valuable matter for the education of the public but would be a sensible, if modest, contribution to the study of etiology and prognosis. A first desideratum was an agreed clinical classification, one which secured at least as general agreement amongst surgical experts as did, for instance, the Turban-Gerhardt classification of the clinical stadia of pulmonary tuberculosis. He thought it would be generally agreed that recent studies of prognosis in phthisis were more exact than those of a generation ago and that that improvement was largely a consequence of standardization. Perhaps in some forms of malignant disease—for instance, of the breast and tongue—the difficulties of standardization were not greater than those met with in classifying phthisis. In others—for instance, malignant disease of the stomach—the difficulties were suerly much greater; but in all cases they could improve upon the present condition.

Dr. BRUCE (Toronto), in speaking of propaganda, mentioned that in Canada, where methods of educating the people had been in vogue for some years, the effect was noticeable in so far as the people did go to the doctors with suspicious "lumps" much earlier than they formerly did. He advocated strongly the campaign for propaganda purposes, so as to educate the public in the early symptoms and signs of cancer, no matter where situated. The results of surgery had advanced enormously in Canada. Dr. Bruce cited a case in which excision of the tongue had been performed by the late Sir Henry Butlin, and in which he himself had removed infected glands fifteen years later.

Mr. HERBERT PATERSON, in reply, agreed with Mr. Childe that statistics might be very misleading, but in this instance statistics supported his own experience that the remote results of operation for carcinoma to-day did not seem better than was the case twenty-five years ago. Sir StClair Thomson was to be congratulated on the excellence of his results in laryngeal cancer. Mr. Paterson thought his statistics were of great value in showing what could be effected by early operation, and they were of special interest from the fact that in none of his cases were the lymphatic glands removed. It was significant that in only two instances were the glands subsequently the seat of new growth.

STANDARDIZATION OF COMMERCIAL PREPARATIONS OF THE PARATHYROID GLANDS.

BY

H. W. C. VINES, M.D.,

FOULERTON RESEARCH STUDENT.

(From the Pathological Laboratory, Cambridge.)

WHILE it is desirable that all substances used for therapeutic administration should be prepared in forms with a known content of the active principle, at the present time such standardization is especially requisite in the case of the organotherapeutic preparations. Though the list of such substances is now very extensive, there are only three of them in which any form of standardization is undertaken as a routine practice—namely, preparations of the thyroid gland, adrenaline and pituitary extracts.

Such a state of affairs constitutes a very real drawback in the scientific aspect of organotherapy, because in so many cases the physician does not know whether the preparation he is using contains any active substance, or if it does he can never be sure that any two preparations will have similar activities, although the stated dosage may be the same. Again, the manufacturer has no means of checking his materials; he treats the fresh tissue according to what he considers to be the best method, but he has no means of determining whether the fresh substance supplied has any activity to begin with or how far its activity may have been altered by the processes he uses. It is not to be wondered at that the results of organotherapy are apt to be variable and contradictory in such circumstances, or that such forms of treatment should be open to derisory criticism.

The following account of a method for the standardization of commercial parathyroid preparations is given as briefly as possible, with the omission of details having a purely scientific bearing. It is hoped that a more detailed account of the reactions involved may be published later, but since it is possible to standardize these preparations, at least to some extent, it is desirable that the method should be thoroughly tested and utilized while the preparations are in demand.

It is generally held that the parathyroid glands have two functions: they regulate calcium metabolism and they are in some way able to prevent intoxication by guanidine and its derivatives. On this second property the standardization method is based. The principle is as follows: if an active parathyroid preparation is incubated at 37° C. with a known amount of guanidine in solution, the amount of guanidine reckoned as picrate at the end of the incubation period is found to be less than at the beginning of the test. Only one function of the glands is therefore tested, but there is reason to believe that if the preparation is deficient in this function it will also be deficient in the other.

Method.

The following solutions are required:

1. A solution of guanidine acetate of approximately 1 per cent. strength; this may be made by dissolving 10 grams of guanidine carbonate in distilled water, neutralizing with acetic acid and making up to one litre.
2. A 1 per cent. solution of calcium chloride.
3. An aqueous saturated solution of picric acid.

The formula for the test solution is as follows:

0.85 per cent. NaCl solution	20 c.cm.
Guanidine acetate solution	10 c.cm.
Calcium chloride solution	1 c.cm.
Phenol red solution	3 drops
Thymol	q.s.

To carry out a test with a desiccated powder of parathyroid gland, 0.065 gram of the powder is added to the above test fluid, and the whole incubated at 37° C. with aeration for four days. In tests carried out until recently the aeration has been intermittent, being stopped at night, and the figures to be quoted will refer to experiments of this type. More recent experiments tend to show that if the aeration is continuous rather higher activity figures may be obtained. During the incubation period the test solution tends to become alkaline and neutrality should be as far as possible maintained by the addition of 2 per cent. acetic acid from time to time. At the end of the period the solution is made up to its original volume, if necessary, and filtered through glass-wool to remove the undissolved parathyroid powder. Half the original volume of the fluid is then taken from the filtrate and at least an equal volume of saturated picric acid solution is added; the excess guanidine is precipitated together with a certain amount of dissolved protein. The picrated fluid is brought just to the boiling point and the guanidine picrate passes into solution; it is filtered hot through glass-wool, the filter washed with boiling water, and the filtrate allowed to stand overnight. The guanidine picrate crystallizes out, and the crystals are collected in a weighed filter-paper, washed with cold water, dried at 100° C. and weighed. The weight of guanidine picrate obtained is compared with that from a control test to which parathyroid substance has not been added, but which has otherwise been identically treated. The difference in weight in milligrams between the two has been taken as an arbitrary activity figure of the parathyroid substance tested.

Results.

1. *Control tests.*—Recovery of guanidine picrate from test solution where inactive substances other than parathyroid have been used.

Substance.	Picrate Recovered.	Known Picrate Content.
Horse serum	215 mg.	220 mg.
	220 ,,	,,
Lecithin	216 ,,	,,
Acetone soluble fats from parathyroid	214 ,,	,,
	226 ,,	,,
Iodized lecithin	208 ,,	,,
	222 ,,	,,
Unknown tissue	246 ,,	260 mg.

These figures show that there is a small error in the method of guanidine estimation, but it is not sufficient to interfere when active parathyroid preparations are tested.

2. The following figures indicate the necessity for adequate aeration of the test fluid; the same parathyroid preparation was used in each case under the standard test condition described above.

	Activity Figure.
No aeration	52, 54
Intermittent aeration	82
Continuous aeration	93

In the next table the values given are those found with intermittent aeration.

3. For the standardization of commercial preparations, the unit of weight for the test has been taken as 0.065 gram, or one grain of the desiccated powder. Where tablet preparations have been tested, a sufficient number of the tablets has been used, according to the strength indicated on the bottle, to make up the unit weight of dried gland.

Preparation from	Activity Figure. Powders.	Tablets.
Group 1:		
Firm A	100, 93, 100	60, 82, 68, 84, 68, 68; 76, 69, 78, 66, 74, 59; 63, 74, 58
Firm C	86	—
Firm G	—	67
Firm I	—	60
Group 2:		
Firm A	67	—
Firm B	66	—
Firm C	66	—
Group 3:		
Firm F	56, 50	—
Firm E	38	—
Firm H	—	31

With the exception of the preparations from Firm A, who have kindly supplied me with numerous samples, these preparations were obtained at random to gauge the average value of the products on the market. The results obtained have been divided into three groups on the basis that all tablet preparations should have an activity index of over 50, and powders over 70. This is based on the following:

	Activity.
Whole glands	106
Desiccated powder from same	93
Tablet from same	76

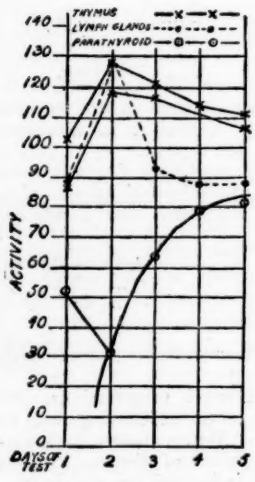
With the preparations in Group 1 good results were obtained clinically in suitable cases, whereas with one of the Group 3 preparations no therapeutic effects were obtained in similar cases. In another instance samples of dried tissue, submitted as parathyroid glands were tested by the method described. Of these samples, specimens A and B were histologically unlike parathyroid gland; specimen C was known to be parathyroid gland by dissection and histological appearance. The activity figure was as follows:

	Activity.
Specimen A	23, 29
Specimen B	14
Specimen C	71

4. Differentiation of parathyroid preparations from other gland preparations. It must be remembered that substances may be present in tissues and tissue extracts which prevent the precipitation of guanidine by picric acid in varying degree. Of these arginine is known to be one and nucleic acid is very probably another. There is also the possibility that other gland substances may have some degree of activity upon guanidine salts.

The following gland substances have been tested under the standard conditions; in all cases desiccated powders were used.

Substance.	Activity.
Parathyroid	100, 93, 100, 86, 67, 66, 66
Thymus...	110, 114, 106, 116
Lymphatic glands	88
Thyroid...	26, 11, 16
Suprarenal, total	37, 32
Pituitary, anterior	33, 30
,, posterior	39, 42
Orchitic	45
Ovarian, total	18
,, residue	28
Corpus luteum	43



The difficulty therefore lies in the means of differentiating between parathyroid, thymus, and lymph glands. This can be done by estimating the activity every day over the period of the test, instead of only at the end. If the figures so obtained are plotted in the form of a graph, quite dissimilar pictures are obtained. (See figure.) The appearance of the thymus and lymphatic gland curves suggests that some substance is dissolved which prevents guanidine precipitation and which gradually disappears under the conditions of the experiment. The parathyroid curve, on the other hand, suggests the possibility of some ferment-like action upon the guanidine.

These are some practical points in connexion with the test, and it is hoped that this method may be found of use in controlling the therapeutic value of parathyroid preparations.

THE TREATMENT OF HYPOTHYROIDISM BY THYROID TRANSPLANTATION.*

BY

ALBERT KOCHER, M.D.,

BERNE.

It is to-day generally admitted by physicians and surgeons that transplantation of thyroid gland tissue, from man to man, or from animal to man, is not successful, and therefore most surgeons do not do it.

It is now forty-five years since my father, the late Professor Theodor Kocher of Berne, introduced this method and made some experiments with it. Since then there have been some successes and many failures. The failures are due, in my opinion, to insufficient technique, especially pre-operative and post-operative technique.

Congenital Absence of Thyroid Gland.

We have, up to date, done 214 thyroid transplantations in man, and it is possible therefore to state the practical result, which is more important than any theory. Amongst the 214 there were about 10 cases of congenital total absence of thyroid gland; in these cases the results are, as a rule, not satisfactory, but 3 out of the 10 cases have benefited so much that they have been able to follow the school normally. One boy has even been able to take a university degree.

Congenital Thyroid Insufficiency.

All the other 204 were cases of hypothyroidism, more or less severe. In such cases the thyroid gland is not absent, but there is greater or less degree of congenital insufficiency. In about half of the cases the condition is not diagnosed early in childhood, because distinct clinical symptoms occur only later in life, when the gland should work more, or when it has been hurt or overdone. Thus, distinct clinical symptoms appear at the age of development, after multiple pregnancies, in the menopause, or at the time when a goitre develops, or when chronic bacterial or toxic thyroiditis sets in, or, more especially, after severe general infections such as typhoid, influenza, dysentery, furunculosis, syphilis, tuberculosis, etc., and also after gynaecological operations, when the ovaries have been partially or totally removed.

Clinical symptoms and the methods of diagnosis of these cases were first described by Theodor Kocher in 1909, under the name of "Slight thyroid insufficiency." For diagnosis the method of choice is Kocher's functional thyroid test; it depends on the change in the white cells and coagulability of blood and the influence of thyroid feeding on it; basal metabolism is very little changed in these cases. Hypothyroidism is not yet sufficiently known; very often severe rheumatism, neuralgia, stomach, intestinal, and heart trouble of unknown origin are due to hypothyroidism and cured by transplantation of thyroid tissue. This is the method of choice in these cases, as thyroid feeding often causes stomach trouble and is never carried on long enough.

Of our 204 cases of hypothyroidism, 26 per cent. have been entirely cured by transplantation and have not taken any thyroid since; 21 per cent. have been very much better since and have to take only now and then a small quantity of thyroid, whilst before the transplantation they had to take continually much more thyroid and never felt so well; 39 per cent. are much better since the transplantation; they have to take thyroid internally, but only about one-half or one-third of the quantity they took before the transplantation. There were only 14 per cent. failures—that is, cases which did not benefit from the transplantation. There is no doubt that this result, in such a number of cases, proves that the transplant is active, at least for several years. In most of the cases the patient's own thyroid gland resumes a normal function after some years and he is cured; if not another transplantation can be done. In twenty of our cases transplantation has been done twice and they got well in eight cases three, and in one four transplantations have been made.

In addition to these clinical results, I can produce direct evidence that the transplanted thyroid tissue takes up the

*A paper read at the meeting of the International Society of Surgery, London, July, 1923.

function of the thyroid; in a case of severe myxoedema in a girl of 11 years the transplant was taken from a patient whose goitre had to be removed. A few weeks later the girl developed between the peritoneum and fascia lata, where an apparently healthy piece of gland from the goitre patient had been transplanted, a hypertrophic goitre of the size of an apple, and at that time all her symptoms of myxoedema had disappeared; she was quite well for five years, when she had typhoid fever; the abdominal goitre became infected and an abscess formed which had to be opened; within a few weeks all her symptoms of myxoedema came back. Von Eiselsberg of Vienna a year ago published a similar case; the patient had been cured of myxoedema by transplanting a piece of gland of a goitre patient in the peritoneum below the liver. The patient died several years after the transplantation from pneumonia. At the *post-mortem* examination a hypertrophic goitre of the size of a hen's egg was found under the liver.

We have succeeded in demonstrating experimentally that the transplant is active. As a rule such experiments have been conducted in a way that could not give a result. The transplantation has usually been made into an animal with a normal thyroid gland; the organism had no want of thyroid and the graft did not live. We proceeded in a different way. We first removed the animal's thyroid almost totally, avoiding the parathyroids, and then waited until the animal developed characteristic symptoms of hypothyroidism. Then a piece of normal thyroid gland of a healthy animal of the same species was transplanted into the upper end of both tibial bones. We then waited until the symptoms of myxoedema in the transplanted animal had disappeared, and a few months later removed the two pieces of gland from the bones, and within a few weeks the symptoms of myxoedema reappeared. I believe that by these observations and experiments we have proved that the transplant can live and, in view of our clinical results, recommend this as the method of choice in cases of hypothyroidism. We believe that it should be tried also in cases of total absence of the thyroid gland.

Selection of Transplant.

The method of performing transplantation in our cases was that described by my father Theodor Kocher in 1909. There are three types of transplantation that can be employed: we may take (1) a normal gland of an animal; (2) pieces of a goitre from a case of Graves's disease; (3) the hypertrophic thyroid tissue around a nodular goitre. We have used all three methods. As early as 1908 we used some heterotransplants from sheep and goats. The best glands to transplant are those from pregnant animals. This method has given a good result in some cases. One of the cases of congenital total absence of thyroid gland mentioned above was entirely cured by transplantation of two pieces the size of a cherry of a normal thyroid gland of a pregnant sheep into the two tibial bones. As a rule, however, homotransplants are much better. They are best taken from the hypertrophic gland of a severe but recent case of Graves's disease, which is in a condition of exquisite cellular hypertrophy and active new formation of vesicles. The best part of the gland to be taken is the upper pole or posterior part of the gland near the superior thyroid artery. It is essential that the pieces of gland (we take usually two to four pieces of the size of a small cherry) shall be put into the receiver's body immediately after being cut out of the donor. The receiver must be ready on a table next to the donor, and the bed for the transplant must be carefully prepared beforehand and in particular all haemorrhage carefully stopped. Besides the glands of patients with Graves's disease, we have very often taken pieces of the hypertrophic thyroid tissue around goitre nodules in young healthy goitre patients. Of course, in every case the donor is examined very carefully beforehand; tests for syphilis and tuberculosis must more especially be done.

The Operation.

As mentioned above, we transplant mostly into the upper end of the tibial bone, where, with Doyen's trephine, the corticalis is opened and a bed in the bone marrow made, exactly of the size of the transplanted piece. We have chosen this bone, first, because it is very vascular and has a special affinity to thyroid tissue, as shown by the frequent bone metastasis in malignant goitre, and secondly, because the gland is very well protected from injury in the bone. However, we also transplant into the sheath between the fascia transversa and peritoneum, or into the peritoneal cavity. But in the latter it is better to stitch the parietal peritoneum over the transplanted piece of gland and not to put the gland free into the peritoneal cavity. If the graft is to be successful, the healing of the wound must take place without any rise of temperature or other post-operative reaction. The most important of all is the pre-operative and post-operative treatment. The patient must take thyroid some time before and several weeks after the transplantation, in order to decrease his actual want of thyroid, because if this is very strong the transplanted gland tissue is simply eaten up by the organism. The non-observation of this is the most common cause of failure of transplantation, especially in cases of total congenital absence of the gland.

DIFFERENTIAL DIAGNOSIS OF RHEUMATOID ARTHRITIS AS A CLINICAL ENTITY.

BY

VINCENT COATES, *M.C.*, M.A., M.D.CANTAB.,

AND

R. G. GORDON, M.D., B.Sc., M.R.C.P.EDIN.,

PHYSICIANS TO THE ROYAL MINERAL WATER HOSPITAL, BATH.

ALL authorities are now agreed that an important factor in the etiology of the arthritides is some form of infective process, and a certain degree of progress has been made in the classification of this amorphous group of clinical material by the recognition of special types as being due to specific infective agencies such as the tubercle bacillus, the pneumococcus, gonococcus, etc. But there remains a large number of cases of non-specific origin which in the past have been aggregated under the term "rheumatoid arthritis." Those with experience in this class of case are not satisfied, however, with this and have preferred the more vague terms of "multiple non-specific infective arthritis," "focal arthritis," or "indeterminate arthritis." Several attempts have been made to differentiate so-called true rheumatoid arthritis from this group, and it is our purpose to report our preliminary investigations for the furtherance of this object.

We would define rheumatoid arthritis as a disease of insidious origin, affecting young adults in particular, usually running a prolonged subacute or chronic course with periodic exacerbations, but occasionally acute in its onset and manifestations, leading to serious deformity of structures in intimate relationship to joints, and associated with digestive disturbance, upset of general metabolism, alteration of the normal blood picture, and with glandular enlargement.

ETIOLOGY.

Patients suffering from rheumatoid arthritis frequently give a history of previous debilitating disease or some prolonged physical strain. A history of rheumatic fever seems to occur more frequently than can be accounted for by the incidence of this disease in the general population. But this condition does not produce chronic intra-articular disease, though repeated inflammatory reactions do occur and may cause such laxity of ligaments and impairment of joint circulation that the synovial membrane is liable to be attacked by other infective agencies. Influenza is another predisposing cause, probably acting simply by the general lowering of resistance, though serous membranes in all parts of the body are liable to inflammatory changes after this disease. Pregnancy and childbirth with their general upset of digestive and metabolic processes are recorded in many instances as the starting point of the attack.

Certain observers[1] have cited cervical and uterine infections, pyelitis, otitis media, furunculosis, etc., as the factories of infection, but we are very doubtful whether these extra-digestive foci are of any real importance in this particular group of cases except in so far as they lower the general resistance. Pyorrhoea and dental caries are frequently, if not always, present, but these conditions are so wellnigh universal that they cannot be held to be solely

responsible. The same applies to tonsillar infection, which, though not so obvious as pyorrhoea and therefore less frequently recognized, is one of the maladies to which most men are heir, and therefore again this cannot be held to be the only factor in the etiology of rheumatoid arthritis.

In almost all cases of the group under discussion there is a history of dyspepsia, which takes the form of anorexia, flatulence, and constipation, the last being a constant feature; but it is unusual to discover any local focus in connexion with the intestinal tract, such as an obviously inflamed gall bladder or appendix. The exact etiology of rheumatoid arthritis, therefore, must remain obscure until such time as the nature of the "soil" has been more fully investigated, when recognition of the type or types of "seed" concerned in the production of the disease should present less difficulty.

Clinical Features.

The predominant feature of rheumatoid arthritis and the one for which the patient seeks advice is the swelling and pain of the joints. The first to be affected are usually the small distal joints, especially of the upper limb. It is characteristic of the early cases to show swelling of the second or second and third metacarpo-phalangeal joints, with pain and slight swelling of the wrist, which precedes ulnar deviation; one or more of the mid-phalangeal joints are often involved and show the characteristic spindle shape. In the later stages the larger joints may be affected, the disease sometimes spreading from joint to joint throughout the body. A symmetrical distribution characterizes the progress of the disease.

The morbid process chiefly affects the synovial membrane and ligamentous structures round the joint, and although this is swollen it is rare that fluid can be extracted in any quantity. That the pathological involvement is not confined to these parts is shown, however, by the changes in bone structure as disclosed by *x*-ray photographs. These changes consist chiefly of rarefaction in the neighbourhood of joint surfaces. It is, indeed, remarkable in late cases with most marked deformities how slight are the osseous changes. As the disease advances the ligaments become much relaxed, with resulting ulnar deviation of fingers and wrist and valgus deformities of the toes and complete flat-foot. In the same way the larger joints, though showing less deformity in the absence of muscular contractures, become markedly unstable, and lateral mobility of the knees is very noticeable.

That the joints are not the only manifestation of the disease is apparent. There would seem to be a general metabolic upset involving the endocrine glands. Clinically there are many signs suggestive of hyperthyroidism. Excessive sweating, fibrillary twitchings, a tendency to disordered action of the heart, and overbrisk tendon reflexes are met with, and there is often that nervous instability and apprehensiveness which is associated with disordered endocrine function. The vasomotor system is markedly upset, with flushing and even dermographia; or a condition of the extremities approaching Raynaud's disease may be found. The skin shows trophic changes, comprising loss of subcutaneous fat and a glazed appearance with loss of hair. The muscular wasting is early and pronounced and more than can be accounted for by the disuse of a limb consequent on the joint condition. It is this wasting, especially of the intrinsic muscles and subcutaneous fat of the hands, that emphasizes the characteristic spindle appearance of the joints.

If careful examination is made in the region of the joint, enlargement of the lymphatic glands can be detected. Inasmuch as the hands are earliest and most severely affected the glands most definitely involved are the epitrochlear, but axillary, femoral, and inguinal are also found enlarged. In 20 cases showing a clinical joint picture as described above all showed enlargement of glands.

The blood picture presents characteristic changes in the majority of cases. Secondary anaemia is common, but by no means universally severe, and a slight or moderate leucocytosis is often met with. The importance of the total white count, which may vary in the course of the disease, is overshadowed by that of the differential, which shows a definite increase in the small mononuclear cells relative to the polymorphonuclears. This feature, however, is only important in conjunction with the other clinical signs, as it is met with in many other forms of arthritis. In 19 cases examined out of the 20 cases mentioned above, all showed a relative increase in small mononuclears. In certain cases the spleen is found to be palpable, but this is never excessive and by no means constant.

Examination of the gastric contents shows absence or diminution of free hydrochloric acid in the majority of cases, and this, in our opinion, is frequently the crucial factor in the whole clinical picture. Thus, in the 20 cases examined, 14 had complete achlorhydria, one a trace of free hydrochloric acid only, 2 marked diminution, while 3 were normal. The test used was Ewald's test meal.

Course of the Disease.

The onset is usually between the ages of 20 and 30, though cases commencing in the adjacent decades are by no means uncommon. It should be noted that this excludes cases of Still's disease, which is presumably rheumatoid arthritis in children. The course is prolonged, extending over years.

Initially there is often a period of pyrexia, the temperature swinging up to 101° or 102°, but not usually higher. This may recur during the succeeding years for a few weeks at a time for no very obvious reason after long periods of remission. The active inflammatory condition may spread from joint to joint, dying out of some and affecting others, and eventually there is a tendency for the condition to die out altogether, often leaving behind it severely deformed joints and (if care is not taken in the management of the case) serious contractures and ankyloses in bad positions.

Theoretical Conclusions.

It is admitted that not nearly enough observations have been carried out to warrant definite conclusions on this clinical group; but this only purports to be a preliminary communication, and it is hoped to carry out further investigations to confirm or modify the views expressed above. Considerable work has already been done on the subject of achlorhydria by Hurst and his collaborators[2] at Guy's Hospital, especially in connexion with Addison's anaemia and subacute combined degeneration of the spinal cord. First they have shown that achlorhydria may be apparently congenital, for in 4 per cent. of perfectly healthy young men without digestive symptoms this condition was found. Hurst further concludes that the achlorhydria precedes not only the anaemic conditions in which it is so frequently discovered, but also those cases of chronic gastritis which formerly were supposed to be the cause of the achylia. The gastritis is due to the failure of the normal softening and diluting action of the juice, and as the food is not sufficiently digested in the stomach it will irritate the intestine in the same way and cause intestinal dyspepsia. At the same time proteins will reach the small and large intestines unchanged, and with them numerous bacteria which would normally be destroyed by the acid disinfecting properties of the gastric juice. The decomposition of the proteins by these bacteria produces further irritative material which modifies the absorption of toxins. Hurst[3] mentions the presence of achylia gastrica in rheumatoid arthritis; Woodwark and Mackenzie Wallis[4] have described diminution or absence of free HCl in 9 out of 10 cases; and Faber[5] has described achylia gastrica in 15 out of 65 patients suffering from chronic polyarthritis. In our view, however, it is probable that this polyarthritis included joint conditions other than that group which we are attempting to differentiate, and that if the observations were confined to those cases showing joints of the typical kind and distribution with glandular enlargement and lymphocytosis, then a much higher percentage of achlorhydria would be found.

In discussing the pathogenesis of subacute combined degeneration and Addison's anaemia, Hurst[6] suggests that the passage of the *Streptococcus longus* from infected teeth and gums through the stomach into the large intestine, owing to the absence of free hydrochloric acid, produces various toxins either from their own activity or from the breaking down of undigested proteins. He suggests that the incidence of anaemia or subacute combined degeneration

depends on the relative production of a haemolysin or a neurotoxin. We would suggest a similar genesis in many instances of rheumatoid arthritis by means of a toxin with a special affinity for synovial membrane.

However, it must always be remembered that the whole metabolism is upset, and further work is required to investigate other possible factors responsible for the production of the clinical changes observed. Many observers have assigned importance to the isolation of various strains of streptococci from the stools, but the results are so far very variable and no reliable conclusions can be drawn. It is possible that the factor of achlorhydria may have some influence in determining this state of affairs, in view of the work of Billings[7] and his collaborators on the variability of streptococcal strains in different media.

We wish to thank Dr. Munro, pathologist at the Royal Mineral Water Hospital, Bath, who was responsible for the blood counts and gastric analyses mentioned above.

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A LARGE RENAL CALCULUS.

BY

R. OGIER WARD, M.CH.OXON., F.R.C.S.ENG.,

ASSISTANT SURGEON TO ST. PETER'S HOSPITAL; FIRST ASSISTANT, SURGICAL UNIT, ST. BARTHOLOMEW'S HOSPITAL.

LARGE stones of the kidney are not common; in this case the calculus weighed 1 lb. 3½ oz., and it is of interest that the symptoms were very mild and that operative treatment was successful.

The drawings by Mr. Thornton Shiells show well the shape of the calculus (Fig. 1) and the left kidney removed with it (Fig. 2). The main mass of the calculus lay in the dilated renal pelvis; the short branches occupied five of the much damaged calyces. The outlet from the renal pelvis is small, and below that the ureter is seen to be greatly dilated and its wall much thickened. The small calculus partially blocked the left ureter at its lower end close to the bladder.

FIG. 1.—Calculus.

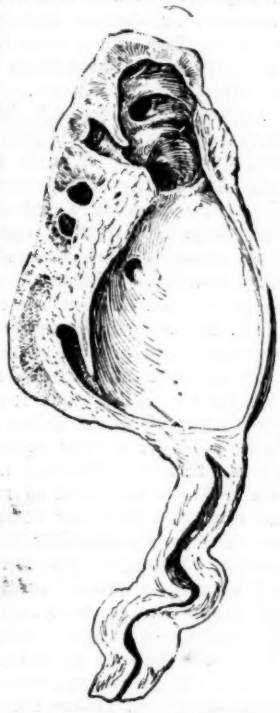

FIG. 2.—Kidney with dilated pelvis.

Dr. H. E. Archer has kindly analysed the calculi and reports as follows:

Renal Calculus.—Weight 1 lb. 3½ oz. (555 grams). Samples taken at five points between the external surface and the centre show a composition, almost constant, of ammonium magnesium phosphate and a little calcium phosphate. The superficial layers also contain a little calcium carbonate. The branches consist of ammonium magnesium phosphate.

Ureteric Calculus.—Weight 2.8 grams. The composition is similar.

The patient was a man, aged 58, who was under my care at St. Peter's Hospital. From youth until he was 35 years old he was in the merchant service, then he retired and lived in Plaistow. For the last twenty-three years his urine has always been dark, sometimes as dark as port, and occasionally he had passed clots of blood. For the last five years his urine had smelt foul. For two years he had occasionally had pain in the left groin but never any renal or vesical pain. A fortnight before admission for the first time he suffered from frequency of micturition, with fever and rigors.

There was no family history of stone. His previous health had been excellent, except for malaria when 21 years old, and acute appendicitis requiring operation five years ago, and gout in one toe three years ago.

On examination the left kidney was easily palpable and obviously greatly enlarged and a little tender. It was freely mobile. His urine was very foul, alkaline, and contained albumin and pus with coliform bacilli and cocci. Cystoscopy showed marked cystitis and an enlargement of the prostate, which could also be felt per rectum. The orifice of the left ureter was inflamed; the efflux was unduly frequent and decidedly purulent. The right ureter was healthy and its efflux clear. *X* rays showed a large shadow in the left renal region.

The left kidney was explored through the usual incision in the loin, and the kidney containing its calculus was excised and also the greater part of the ureter and the small calculus in it.

Healing was slightly delayed by some suppuration in the scar. Two months later the enlarged prostate was enucleated suprapubically, and he has made an excellent recovery from both operations.

TREATMENT OF URTICARIA WITH COLLOSOL MANGANESE.

BY

H. McCORMICK MITCHELL, M.B., C.M.ABER.,

SENIOR HONORARY DERMATOLOGIST, CANCER AND SKIN HOSPITAL, LIVERPOOL.

IN a large skin clinic a considerable percentage of cases of urticaria, which are most intractable to treatment, are encountered. Although the pathology of urticaria is by no means definitely understood, I think we may reasonably assume that it is due to the action of an irritant on the vessels at the point where the cutaneous lesions make their appearance. This irritant, be it a toxin or protein, may reach the vessels from an external source or from the blood stream. As an illustration of the former I may cite the urticarial rash caused by nettles; the rash in this case is produced by an irritant from the plant reaching the blood and lymphatic vessels through the skin. As an example of the latter, the urticaria following the ingestion of certain shellfish may be taken; here the toxin or protein would appear to reach the blood stream through the intestinal canal.

It is the experience of every dermatologist that often cases are met with for which no cause can be assigned. It was owing to this experience that I was induced to try collosol manganese in the treatment of urticaria. Metals given in a colloid state increase oxidation and stimulate the protein colloidal particles in the serum, resulting in the dispersion of these particles so that the surface exposed to the invading particles becomes greater. The increased activity of the protein particles in the tissue and fluid has a destructive action on the invading protein or toxin.

It was with this theory in mind that I decided to try collosol manganese in some obscure cases of urticaria. The following four cases are given to illustrate the effect.

CASE I.

A woman, aged 27, unmarried, had suffered from daily attacks of "nettle rash" for twelve months. When I first saw her the face, arms, legs, chest, and neck were thickly covered with flat wheals varying in size from a coffee bean to a five-shilling piece. There was intense itching and burning. I gave her 0.5 c.cm. collosol manganese by intramuscular injections. On returning at the end of a week she reported that the rash had been much better and the burning and itching sensation decidedly diminished. I gave another 0.5 c.cm., and she again reported an improvement at the end of the second week. I gave her four more injections (1 c.cm., 1.5 c.cm., 1.5 c.cm., and 2 c.cm.) at weekly intervals, and at the end of six weeks of treatment she was quite free of her trouble. Six months afterwards she had a slight recurrence, and

I gave her two injections (1.5 c.cm. and 2 c.cm.) at an interval of seven days. The rash disappeared and she has been quite free since.

CASE II.

A married woman, aged 24, had suffered from regular attacks of urticaria all over the body, but more pronounced where the clothing was tight (waist, etc.), for nine months. When I first saw her she had a typical urticarial rash on the legs, arms, chest, and round the waist, and at that time any scratching or irritation brought out fresh wheals. She was in a highly excited and nervous condition. I gave her 0.5 c.cm. collosol manganese by intramuscular injection. On her return at the end of a week she was much better and reported that the rash had only appeared on two occasions during the interval. I gave her another injection of 0.5 c.cm. At the end of the second week she was decidedly better. I gave her four more injections (1 c.cm., 1.5 c.cm., 1.5 c.cm., and 2 c.cm.) at weekly intervals, and at the end of six weeks the symptoms had entirely disappeared. Twelve months after the completion of the treatment she reported herself as being quite well.

CASE III.

A married woman, aged 29. This case was more intractable; after six injections as above described the symptoms still continued, but with less violence. I gave her four more injections (1.5 c.cm.) at intervals of two weeks, and at the end of eight weeks there was no evidence of the rash. After an interval of fourteen months she writes to say that there has been no recurrence.

CASE IV.

A man, aged 48, had been troubled with "nettle rash" for several months. I gave him four weekly injections (1 c.cm., 1 c.cm., 1.5 c.cm., 1.5 c.cm.) by intramuscular injection. At the end of the fourth week he was quite free and the treatment was discontinued.

Since treating the above cases several others have received the same treatment with marked success, but sufficient time has not yet elapsed to include them in statistics.

VACCINATION PROPAGANDA AND THE MEDICAL PROFESSION.

BY

C. KILLICK MILLARD, M.D., D.Sc.,

MEDICAL OFFICER OF HEALTH, LEICESTER.

THERE have been several suggestions recently that the "conscience clause" of the 1898 Vaccination Act should be repealed and compulsory vaccination enforced more uncompromisingly. A suggestion has also been made by a correspondent of the BRITISH MEDICAL JOURNAL (July 21st, p. 130) that an active propaganda in favour of vaccination should be launched, with the special object of depicting the horrors of small-pox graphically on mural posters.

It is doubtful if the provaccinist "die-hards" who favour these suggestions quite appreciate what a change has taken place as regards the "vaccination question" during recent years. Whether we like it or not we have got to face the fact that the logic of events has told heavily against the provaccinist position (in some of its aspects at least) and in favour of the antivaccinists.

Infantile vaccination reached its maximum in this country in 1881, when the vaccination figure, expressed as a percentage of the births, was 86.6. Since then it has fallen continuously until in 1921 it was only 38.3. Ever since this decline set in we, as a profession, have taken almost every opportunity, in season and out of season, to warn the public of what we sincerely believed would be the inevitable consequences of this neglect of vaccination—namely, an increase, and a serious increase, in small-pox mortality. When the "conscience clause" was proposed, as a result of the Royal Commission's report, we opposed it for all we were worth. We said it would result in a further neglect of vaccination, and we declined to accept any responsibility for the consequences. At that time we may be said to have "shot our bolt," and the bolt has failed. The "conscience clause" was passed, a further and serious decrease in vaccination followed, but instead of any increase in small-pox mortality it has continued to fall. It is true there was a slight increase for a couple of years, in 1902-3, but since then it has not merely fallen—it has collapsed. For the past seventeen years in this country small-pox mortality has been a negligible quantity. It has caused fewer deaths than almost any other zymotic disease. Even chicken-pox, most despised of zymotics, has caused 1,277 deaths in the sixteen years 1906-20, against only 223 from small-pox, and if we deduct small-pox deaths in vaccinated subjects the contrast would be still more striking. Why, even the registered deaths from vaccinia amounted to 165, and it has recently been admitted, in answer to a question in Parliament, that by no means all the deaths due to sepsis following vaccination are debited by the Registrar-General to vaccinia.

The medical profession has kept saying: "Only wait! Have a little patience and Nemesis will surely come!" But the years pass and Nemesis does not come. Ten years after the city of Leicester, in spite of all medical warnings, had openly set the Vaccination Acts at defiance, an epidemic of small-pox did occur (in 1893), but it was a damp squib, not at all what had been prophesied. Ten years later, in 1903, came another epidemic; again it was a damp squib—certainly not Nemesis. For the past eighteen years there has not been a single death from small-pox in Leicester. And now comes Gloucester, a city almost as notorious as a centre of antivaccination as Leicester. No one will deny that every effort was exerted to make the most of the recent Gloucester epidemic. Everything that press publicity could do to magnify the seriousness of the outbreak and bring home to the public the heinousness of neglecting vaccination was done. Yet instead of a dreadful object lesson the cases have been so extremely, almost absurdly, mild that great difficulty was experienced in persuading the people that this really was small-pox, of the horrors of which they had heard so much. One little baby, six weeks old, was the only victim who has succumbed to it. Surely it is a case of the mountain in labour!

The most regrettable thing about the epidemic, from the medical point of view, is that there ought never to have been an epidemic at all, but for the unfortunate failure of members of our own profession to recognize the true nature of the disease. Once it was recognized and modern measures of prevention, particularly isolation in hospital, put in operation, the outbreak quickly subsided. Yet this is the time when the die-hards would agitate for provaccinist legislation and embark on propaganda. Surely we must show some sense of proportion if we would retain the respect and confidence of the public, which looks to us for advice and guidance.

I recognize and admit, in spite of the fact that small-pox mortality has been declining in this country for the past fifty years, that at some future time it *may* return. So *may* that of any other zymotic disease that has disappeared or is disappearing since the advent of the sanitary era. But happily in the case of small-pox we possess a "talisman" which we do not possess in the case of any other disease. I refer, of course, to recent vaccination, to be performed if the need for it should ever arise, and which for me robs small-pox of much of the terror which it seems to inspire in so many other medical men.

To prevent misapprehension let me say that it is not vaccination which is at fault to-day, but rather, as I suggest, our method of using and applying it. The power of vaccination to confer temporary immunity against small-pox upon the individual is still as certain to-day as any fact in the whole field of medicine. But I venture also to say that the case for compulsory infant vaccination as a measure for protecting the community has never been weaker. I suggest that it rests on a very shaky foundation, and that it is only a question of time before this country will follow the example of the State of New York and see the wisdom of entirely abolishing compulsory vaccination. Those who believe in infant vaccination will still be able to have their children vaccinated, and those who object to vaccination will please themselves. When that time comes this unhappy controversy, which has aroused so many bad passions, wasted so much printer's ink, taken up so much valuable time of the Minister of Health in answering questions in Parliament, and done more than anything else to bring our profession into disrepute, will no doubt die a natural death from inanition. Prejudice against and opposition to vaccination will follow suit from lack of food to feed on, and if and when virulent small-pox returns, and the need for recent vaccination arises, it will be far easier, I submit, to persuade people to be vaccinated.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

SPONTANEOUS PNEUMOTHORAX FOLLOWING PLEURAL EFFUSION.

A POINT of interest in the following case is that there was no pain associated with the complication, and no feeling of anything giving way. The patient's only complaints were those of extreme weakness and of anxiety on account of the "swishing noise and sensation" over the site of the cavity, where fremitus was much increased.

M. G., aged 22 years, was admitted to the Grampian Sanatorium, Kingussie, in July, 1921, as an acute case of pulmonary tuberculosis affecting the left upper and middle lobes, with a good deal of systemic intoxication. Her brother was already an inpatient with a similar lesion and systemic disturbance.

During the first year a steady improvement was maintained, but in July, 1922, after an influenzal cold the patient began to go back. She was kept in bed on complete rest, but in spite of this, in January, 1923, a new focus began to appear in the left lower lobe. Within two months a large cavity (confirmed by *x* rays) had developed; the temperature had a persistent daily swing of from 3° to 4°; the sputum was now 3 oz. per diem and the weight had fallen by 1 st.

After consultation it was decided to induce an artificial pneumothorax on the left side and this was begun on May 11th. On May 22nd, after three inductions of from 200 to 300 c.cm. of air, the *x* rays showed the left lung fairly well compressed; no displacement of the mediastinum; a broad pleural adhesion in the lower axilla and a slight amount of pleural effusion. A week later the effusion had reached the level of the fifth rib and the pneumothorax manometer registered a respiratory pressure of +4, zero. As the patient was in no distress, the temperature coming down steadily and the sputum gradually decreasing, it seemed advisable to leave the fluid to maintain the collapsed condition of the lung rather than withdraw it and replace with air. The effusion, which shortly reached the level of the third rib and remained there, was sterile, as was demonstrated from time to time during the following weeks.

By July 16th the pleural effusion was beginning to be absorbed and it was decided to go on with further inductions of air. The sputum had slightly increased. Before a refill was given, there was a sudden increase of sputum, very fluid, and obviously containing pleural effusion. This continued for forty-eight hours; the patient was evidently suffering from shock, and physical examination showed the dullness of the effusion replaced by a hyper-resonant note. The presence of a natural pneumothorax was proved by the induction of 800 c.cm. of air without any alteration in the intrapleural pressure, which stood at zero, −4. She was freely stimulated, but died in the early hours of July 22nd.

A *post-mortem* examination was unobtainable, but it seems evident that the continued stretching of the pleural adhesion combined with the extension of the disease had finally ruptured a very large thin-walled cavity communicating with a large bronchus, allowing the pleural effusion to be expectorated. The question arises: Would it have been better to remove the effusion in the first instance and replace with air?

I have to thank Dr. Felix Savy for permission to publish particulars of the case.

PHYLLIS FLEMING, M.A., M.B., Ch.B.,
Resident Medical Officer, Grampian Sanatorium, Kingussie, N.B.

UNUSUAL POSITION OF CHILD DURING DELIVERY.

I WAS called to attend a confinement case, and on arrival found labour so far advanced that the vulva was gaping with each pain. On palpation I diagnosed face to pubes and did not make a vaginal examination.

I waited for about five hours, thinking that as the mother had advanced so far she might deliver herself, but there was no further advance at the end of that time. I left her to get something which I had omitted to bring, intending to put on the forceps, and was delayed some time. On my return I found the head ready to come through, and left it to nature. The head came through occipito-anterior but slightly oblique; the neck was twisted; the chest and abdomen came through in the anterior position. I believe that if I had used the forceps I should have fractured the child's neck.

Kingsbury, Tamworth. W. F. MOORE, M.B.

Reviews.

SURGERY OF THE BILIARY PASSAGES.

PROFESSOR HARTMANN has written a treatise on the surgery of the biliary passages[1] which, while it embraces the whole of that subject, is devoted more especially to the various forms of cholecystitis and their complications. Although he has not omitted to refer to the writings of others, the work is principally based on his own personal observations, but the pathological anatomy of cholecystitis is discussed by Dr. Renaud and illustrated by him on a series of thirty-four well executed plates. Professor Hartmann's description of the technique of the various operations practised on the biliary passages is followed by an account of the results, and more particularly of the remote results, of the operations. In discussing the pathogeny of biliary lithiasis he expresses the view that the cholesterinaemia, which is almost habitual in patients, is the result rather than the cause of the cholecystitis, and notes that the so-called strawberry gall bladder, in which the mucous membrane is studded with minute particles of cholesterine, is not generally associated with gall stones. Reference is made to Mignot's researches, in which it was shown that neither the presence of foreign bodies, nor biliary stasis, nor infection, would, acting alone, lead to the production of gall stones, but that their experimental production followed the action of an attenuated infection combined with partial stagnation of bile. In connexion with calculi in the common duct, jaundice, it is stated, is never completely absent, but in 5 per cent. of the cases it had disappeared at the time of operation, although gall stones, some of large size, were found in the lower part of the duct, an observation that should lead the surgeon invariably to examine the common duct in all operations in biliary cases. Hartmann's statistics confirm the law of Courvoisier-Terrier relating to the distension of the gall bladder, but the value of the law is diminished by the fact that the enlargement of the liver in biliary obstruction often renders even a large gall bladder inaccessible to palpation. The propagation of inflammation to the peritoneum in cholecystitis differs from that in appendicitis in being less diffuse. In three cases only did Hartmann meet with a diffuse suppurative peritonitis resulting from cholecystitis. In the comparatively rare cases of acute peritonitis following perforation, it is recommended to drain the peritoneum by a tube in the pouch of Douglas, after dealing with the local lesion.

A chapter on the experimental results of ablation of the gall bladder is contributed by Dr. Hautefort. The experiments described show that when a ligature is placed at a little distance from the termination of the cystic duct dilatation of the proximal part of the duct ensues, but if it is placed at the very termination of the duct no diverticulum results. In either case the main ducts undergo a compensatory enlargement, which, however, does not affect the intrahepatic ducts.

In the chapter dealing with operative technique the value of hyperextension of the trunk in obtaining a full view of the field of operation is insisted on. The reason why some operators have failed to appreciate the advantage of this position is that they have placed the block too far down in the lumbar region; it should be beneath the lower dorsal region. With hyperextension properly applied, combined with exteriorization of the edge of the liver and rotation of the organ, it is possible to bring the portal fissure up to the level of the skin, so that in thin subjects the surgeon could, if he wished, suture the common duct to the edges of the abdominal incision. On the question of combining cholecystectomy with choledochotomy Hartmann states that he performs the double operation in 85 per cent. of his cases. In speaking of the results of cholecystotomy reference is made to the frequency of incomplete removal of the calculi, and the consequent tendency to abandon this operation in favour of cholecystectomy.

A chapter is devoted to cancer of the bile-papilla, which

[1] *Chirurgie des Voies Biliaires.* By Henri Hartmann. Paris: Masson et Cie. 1923. (Imp. 8vo, pp. 356; 87 figures. Fr. 30 net.)

the author has excised in four cases. Carcinoma developing from the duodenal mucosa is to be distinguished from that of the ampulla itself; the former tends to invade the bowel circularly, the latter shows little disposition to extend or to invade the neighbouring parts, and may for long, and even to the time of death, remain limited to the ampulla. In removing the growth the transduodenal route is usually adopted. In many cases the tumour has been removed without incising the whole thickness of the duodenal wall; in others it has been necessary to perform a transverse resection. The author refers to 32 cases, with 14 deaths. The after-histories were obtained in 11 cases; recurrence took place in 6 in from three months to two and a half years; 5 were in perfect health after eight months, two years, four years, six years, and nine years. Reference is made to a case under Abell which was treated with radium after duodenotomy; the final result is not stated. The value of the book is greatly enhanced by the large number of fully reported cases.

THE CLASSIFICATION OF TUMOURS.

PROFESSOR MASSON'S work on tumours and histological diagnosis forms part of the twenty-seventh volume of the *Traité de Pathologie Médicale*,[2] published under the direction of Professor Sergent. The work is divided into three parts, dealing with the theoretical study of tumours, the concrete study of tumours, and laboratory technique. Tumours are defined as purely cellular or tissue formations, the essential character of which is the proliferation of the cells of a definite region, producing masses that persist and live as parasites on the organism. They are primarily classified as (1) dysgenetic, constituted of tissues normal in themselves but abnormally situated; (2) hyperplasic, due to a definite irritant external to the cells themselves; and (3) neoplasic, composed of cells possessing a newly acquired, indefinite, and autonomous fertility, and simple or malignant in their action. The three classes are, therefore, distinguished by their cellular fertility, which is embryonic in the first, irritative in the second, and inherent and autonomous in the third.

In treating of dysgenetic tumours the whole subject of heterotopy is discussed, including grafts and transplantations, vestigial rests, traumatic inclusions, and dysembryomas. The last named may be total, arising from cells capable of producing any tissue of the body (teratoma); regional or partial, arising from somewhat more differentiated cells; or simple, arising from fully differentiated cells of one type. None of the tumours classed as dysgenetic are to be regarded as neoplasms, but they may become neoplasic.

In dealing with hyperplasic tumours it becomes necessary to study the reaction of the tissues to external irritants, and a chapter is accordingly devoted to acute and chronic inflammation, simple and specific, and to tissue repair; metaplasia is also considered in this connexion. As bearing on the nomenclature of tumours the author adopts the view that a cell is characterized by its function and not by its blastodermic origin; an epithelial cell which assumes the property of secreting collagen or chondrin thereby becomes a connective tissue or cartilage cell. On this view, for instance, adrenal growths are properly placed among epithelial tumours. On the other hand, meningeal tumours present some difficulty; the meninges are believed to arise by migration of cells of nervous origin, which take on the characters of mesodermal cells, so that the membranes have some analogy to the sheath of Schwann. Masson, for this reason, excludes meningeal tumours from the connective tissue group. The name "meningoblastoma" has been suggested for them, and is adopted by the author.

In the second part of the book, dealing with the concrete study of tumours, the different tissues and organs are taken in order, and described on the basis of the classification above mentioned, and this, the principal part of the work, has been carried out with great completeness and the accompanying illustrations are good. The author deplores the lack of interest shown in pathological anatomy in France at the present time, and claims that the status of the pathological anatomist as a specialist should receive more recognition. He insists on the importance of histology in medical diagnosis, but on one condition—namely, that it is in the hands of specialists. But specialists cannot be had unless they are able to live, and Masson closes his work with the remark, "l'histologiste doit être payé en raison des services qu'il rend."

[2] Traité de Pathologie Médicale et de Thérapeutique Appliquée. Publié sous la direction de E. Sergent, L. Ribadeau-Dumas, L. Babonneix. XXVII. *Diagnostics de Laboratoire: II. Tumeurs—Diagnostics Histologiques.* Par P. Masson. Paris: A. Maloine et Fils. 1923. (Demy 8vo, pp. 737; 163 figures, 6 plates. Fr. 50.)

CANCER OF THE OESOPHAGUS.

M. JEAN GUISEZ has been practising oesophagoscopy for twenty years; the total number of examinations he has made exceeds 2,500; the knowledge he has acquired is considerable. It is this knowledge, derived mostly from his own observations and the inferences he has drawn from them, that is embodied in his book on strictures of the oesophagus and trachea.[3] The greater part—about five-sixths—is devoted to the oesophagus; the section on the trachea and bronchi occupies only about fifty pages at the end. He adopts the usual classification of strictures into the intrinsic and extrinsic varieties. It is interesting to note that in his experience more than two-thirds of the intrinsic strictures of the oesophagus are due to cancer. On this subject he is peculiarly illuminating. For instance, he has observed that in about 70 per cent. of these cases there has been an element of personal grief, following some domestic or financial loss. He is inclined to the belief that worry so caused gives rise to a spasmodic stricture, which in its turn is followed by stasis and oesophagitis, the latter preceding the onset of a malignant growth. Whether the first part of this sequence is correct it is difficult to say, but there seems to be little doubt about the truth of the second part—the connexion between inflammation and cancer. Over and over again he has seen an epithelial patch grafted on the wall of an inflamed portion of the oesophagus—an experience that but confirms the findings of others.

With regard to the treatment of oesophageal cancer his opinion of surgical intervention is not very high. His own successes have resulted chiefly from the use of radium. In the space of thirteen years he has treated 170 cases of cancer by the local application of this substance. The diagnosis was verified by biopsy. In 92 of these a cure was apparently effected. In 18 of them the cure has been maintained both clinically and oesophagoscopically over a period varying from one to eleven years. These results are distinctly favourable and lend hope for a further extension in the adoption of this treatment. The book is very well illustrated, and is so full of personal observations that it has all the charm that attends originality. It will be welcomed as heartily in this country as in France.

BLOOD SUGAR.

A CAREFUL and painstaking study of the blood sugar in normal and diabetic subjects is presented in the form of a monograph by K. M. HANSEN.[4] The problems investigated are, in general, familiar to workers in this field and centre round the variations in blood sugar induced by fasting and by the administration of carbohydrate.

The treatise is divided into three sections. The first deals with the oscillations in the concentration of blood sugar in normal and diabetic individuals. If determinations of the blood sugar are made at frequent intervals after the ingestion of glucose, it is found that the curve does not rise smoothly but in a succession of waves of oscillations, and in fasting persons the fall of the blood sugar occurs in a similar fashion. This phenomenon is exhibited by both normal and diabetic subjects and

[3] *Diagnostic et Traitement des Retrécissements de l'Oesophage et de la Trachée.* By Dr. Jean Guisez. Paris: Masson et Cie. 1923. (Roy. 8vo, pp. 364; 216 figures, 2 coloured plates. Fr. 30.)

[4] *Investigations on the Blood Sugar in Man: Conditions of Oscillation, Rise and Distribution.* By Karen Marie Hansen. Copenhagen: Nielsen and Lydiche. 1923. (Med. 8vo, pp. 224.)

held by the authoress to be due to intermittent activity of the liver in either storing up sugar as glycogen or discharging the latter as glucose into the blood stream according to the condition and demands of the organism.

The second section is concerned with the rise in the quantity of sugar in the blood after administration of glucose. In normal individuals the upper limit to which the blood sugar can be raised is about 0.18 per cent., while in diabetics the total rise of the curve is directly proportional to the amount of glucose ingested. The opinion is expressed that the production of enzymes or hormones (insulin) is stimulated by the presence of large amounts of sugar, and that this increased activity in the normal organism prevents the rise of blood sugar above the value of 0.18 per cent. The measure of this enzymatic activity is called the "removal acceleration," and it is shown that in diabetics this power is lower than normal in degrees varying in proportion to the severity of the disease. Moreover, the rise of the blood sugar curve per gram of glucose taken is, under proper conditions, constant in diabetic subjects, and a function test based on determination of the "one gram rise" and "removal acceleration" is proposed.

The third section deals with the distribution of glucose between plasma and corpuscles. In fasting diabetics there is usually a higher percentage of sugar in the plasma than in the corpuscles, while in normal blood the percentage in each is about equal. This may of course be due simply to the concomitant acidosis, as Hamburger has shown that in horse's blood the cells give up glucose to the plasma when carbon dioxide is passed through it.

The method for determination of blood sugar used throughout these researches is that of Hagedorn and Jensen. It is based on the reduction of potassium ferricyanide. It appears to be a convenient, easy, and accurate procedure, and, as it requires only 0.1 c.cm. blood, is worthy of note and trial. A description of the method is given in *Biochemische Zeitschrift*, 135, 46 (1923).

The book is printed in English, and although the phraseology is occasionally somewhat unusual and there are frequent misspellings, the meaning is always clear.

MACKENZIE'S "HEART AFFECTIONS."

SIR JAMES MACKENZIE'S book on *The Principles of Diagnosis and Treatment in Heart Affections* has been reprinted several times since it first appeared in 1916, and the editing of a second edition[5] has been placed in the hands of Dr. Orr, one of the physicians at the St. Andrews Institute. There has been some rearrangement of the chapters, but there has been little real alteration of the substance of the work. It is a book specially designed for the general practitioner and consequently the bedside features of the various heart affections are presented rather than the aspects which are determined by instrumental aids.

The main features of the book are probably well known. After dealing in a general manner with heart failure, chapters are devoted to certain symptoms and some of the physical signs met with in patients suffering from heart disease. Particular attention is given to murmurs and the differentiation between physiological, functional, and organic murmurs. A consideration of heart irregularities leads to separate chapters on auricular fibrillation and auricular flutter. A useful though short part deals with so-called "heart attacks." Prognosis and treatment appear at various parts of the book, but the principles of both are summarized in the closing chapters. An essay on medical research, with which the previous edition opened, has been relegated to an appendix.

The practice of printing many of the salient sentences in bold type has been continued in this edition, and rivets the attention of the reader on points which the author wishes to impress. The book is calculated to give a clear outline of the general principles which underlie the present-day practice of cardiology without tiring the reader with details of the methods which have made present knowledge possible. It can be confidently recommended to the general practitioner, for whom it has been specially prepared.

[5] *Principles of Diagnosis and Treatment in Heart Affections.* By Sir James Mackenzie, M.D., F.R.S., F.R.C.P., LL.D.Aberd. and Edin., F.R.C.P.I.Hon., and James Orr, M.B., Ch.B. Second edition. Oxford Medical Publications. London: Henry Frowde, and Hodder and Stoughton. 1923. (Demy 8vo, pp. vii + 247; 26 figures. 7s. 6d. net.)

HALLIBURTON'S "PHYSIOLOGY."

THE appearance of the sixteenth edition of Professor HALLIBURTON'S *Handbook of Physiology*[6] brings home forcibly the loss to medical education occasioned by the regretted retirement of the author from the chair of physiology at King's College, London. The severance of this long association seems to mark a milestone in the progress of medical research and education. It must, however, be with some satisfaction that Professor Halliburton is able to feel that he is still, through the pages of his book, in touch with so large a number of students, and we hope that he will continue the frequent labour of keeping it up to date.

The book has a fascinating history. In these days of ephemeral publications it is reassuring to be able to look back seventy-five years to the inception of this work. From 1848 to 1896 the book, which bore the title of *Kirke's Physiology*, was edited by a succession of teachers at St. Bartholomew's Hospital Medical School, and this association was only broken when the present author undertook the care of the work twenty-seven years ago. His stewardship has seen a profound remodelling of the whole; sixteen editions have appeared and upwards of 80,000 copies have been printed. In the face of such evidence of sustained popularity little is left to the reviewer but to cry the news of a further edition.

This edition has not been called forth simply at the convenience of the publisher, for the revision of the text has been thorough. The book forms an introduction to human physiology particularly designed to meet the requirements of the medical student. The general sequence of the subject matter has been somewhat altered and the author has succeeded in introducing a great deal of new matter while exerting a wise caution in withholding much the significance of which it is as yet impossible to assay. The student will be grateful for this reticence. A valuable chapter on the bearing of physical chemistry on physiological problems has been introduced and will point the intelligent student to the new lines along which physiology is looking for answers to its old mysteries. The chapters devoted to respiration have been rewritten with the assistance of Mr. J. Barcroft, whilst Dr. J. H. A. Marshall has been associated with the revision of the subject of reproduction. The authority of this collaboration is token of the sincerity with which the re-editing has been undertaken.

A happy inspiration has led to the inclusion of six portraits of famous physiologists of the past. The personal relations which have meant so much in the earlier progress of science are still very potent, though their influence is not so obvious when so many more are engaged in research, and any gesture which brings the personal touch is a reminder of the individuality of scientific imagination.

We commend, anew, this careful labour on behalf of medical and scientific teaching.

HUMAN ANATOMY FOR DENTAL STUDENTS.

MR. BRAMBLE GREEN, in his *Manual of Human Anatomy for Dental Students*,[7] has produced the first textbook of anatomy specially designed for the dental student. The need was urgent, and this first authoritative attempt to define the anatomical needs of the dental student will be both welcomed and criticized by teachers, students, and examiners alike. The author's endeavour has been to give a detailed account of the regional anatomy of the head and neck and "an elementary description of the remainder of the body by systems." In the systematic portion only the main facts are presented, but there is sufficient detail and sequence

[6] *Handbook of Physiology.* By W. D. Halliburton, M.D., LL.D., F.R.C.P., F.R.S. New and sixteenth edition. London: John Murray. 1923. (Demy 8vo, pp. xix + 968; 580 figures, 3 coloured plates. 21s. net.)

[7] *A Manual of Human Anatomy for Dental Students.* By R. Bramble Green, M.B., B.S.Lond., F.R.C.S.Eng. London: Bean Brothers, Ltd. 1923. (Demy 8vo, pp. 10 + 263; 67 figures, including coloured plates. 18s. net.)

in statement of facts to give a clear working idea of the general anatomy of the human body. Part II, which comprises over half the book, contains a detailed account of the regional anatomy of the head and neck. It is clearly written and with its sectional illustrations and coloured plates should make anatomy an attractive study to the dental student.

The only criticisms we have to offer are rather of the nature of suggestions. The dental student wants to know why pain sometimes is referred across the middle line to the incisor teeth of the opposite side, and why he sometimes sees true arterial bleeding from a broken alveolar plate. We suggest greater detail in the description of the arterial and nervous supply of the jaws is desirable. The student also wants to know why a cancer of one side of the mouth infects the lymphatic glands of the opposite side, and why septic conditions of the teeth may cause enlargement of distant lymphatic glands. Again we suggest greater detail.

In general the illustrations are very good, but Fig. 8, "Atlas and Axis," is rather confusing, and Fig. 16, "Anterior Surface of Scapula," fails to convey the idea that the subscapular fossa is in reality a fossa. There are a few printer's (or reader's) errors, such as "public arch" for pubic arch, and "known as the quadrate and the lobes" (of the liver).

We recommend the book to the notice of all engaged in teaching the dental student.

SCIENCE AND CIVILIZATION.

THE essays by various authorities arranged and edited by Mr. F. S. MARVIN under the title *Science and Civilization*[8] for the sixth volume of the Unity Series are based on lectures given at the sixth Unity History School held at Woodbrooke near Birmingham in August, 1922. Whereas in the previous volumes the problems connected with the unity of mankind have been considered from a synthetic and general point of view, this volume is devoted to analytical discussion of the scientific factors that have bound humanity together in historical times. The editor acknowledges in cordial terms the help of Dr. Charles Singer, who contributes two out of the twelve lectures. In his account of ancient medicine he expresses the opinion that the scientific idea—the conception that the world was knowable, inasmuch and in so far as it could be investigated—arose in the sixth century B.C. among the Ionic Greeks, and that Greek medicine first put this rational basis to the test. It is held, therefore, that not only scientific medicine but our clinical tradition and standard of ethics are due to the genius of the great age of Greece. The Romans, it is alleged, did not develop scientific tastes, and it is asserted that no man of Roman blood ever wrote an important medical book. In his second article on "The Dark Ages and the Dawn" Dr. Singer describes the sleep of the Middle Ages (fifth to sixteenth centuries inclusive) and the subsequent rebirth of the scientific idea in 1543 with the appearance of Vesalius's *De Fabrica* and Copernicus's *De Revolutionibus Orbium Caelestium*; justice is, however, done to Roger Bacon's influence in bringing about the dawn of modern science. Like his other numerous contributions to medical history these two articles show, besides their extensive learning, that the proper aim of this line of research is the study of ideas rather than that of biography, interesting and attractive as the latter may be.

In the next article Professor A. N. Whitehead fixes the year 1642 as the centre of that period of about a hundred years during which the first physical synthesis was framed to form the basis of science; this year saw the death of Galileo and the birth of Newton. In describing the opposition to Galileo, Professor Whitehead remarks "it is characteristic of shocked sentiment in the case of men whose learning surpasses their genius that they begin to quote Aristotle. Accordingly Aristotle was hurled at Galileo." In his account of the influence of science on the industrial revolution at the end of the eighteenth century, Mr. C. H. Desch depicts the evil effects of machinery in the early or palaeotechnical period when social good was subordinated to private greed and natural resources, such as coal, were wasted, and contends that only now is the neo-technical age commencing.

Professor J. Arthur Thomson writes brightly on the influence of Darwinism on thought and life, explaining the changes that have taken place in the Darwinian doctrine and illustrating its influences on sociology, religion, and ordinary human life. Two subsequent articles expand the last two subjects; in an eloquent lecture on science and religion Mr. Julian Huxley, while insisting on the limitations, maintains that the scientific manner of thinking can lay the foundation for something constructive in religion; a rigid dogma is impossible and at present science cannot discuss immortality. The editor, Mr. F. S. Marvin, in a summary of the volume entitled "Science and Human Affairs," pays special attention to sociology, balances the influence of science with that of modern philosophy, especially that of Bergson, and incidentally describes the League of Nations as the natural outcome of the unifying process which has gone on more or less rapidly for the last hundred years. In his article on the relations of science and health, Dr. F. G. Crookshank complains of the modern "scholastic" physician for dealing with "hypostatized diseases" rather than with "what happens," for considering individual cases to the neglect of the causal conditions of epidemics. Like the other articles in this stimulating volume this provides much subject for thought and cannot fail to interest the reader.

[8] *Science and Civilization.* Essays arranged and edited by F. S. Marvin. The Unity Series VI. Humphrey Milford, Oxford University Press. 1923. (Med. 8vo, pp. 350. 12s. 6d.)

NOTES ON BOOKS.

IN a small book of fifty-six pages Dr. R. A. BENNETT gives a useful account of *Hodgkin's Disease*,[9] evidently based on much reading and careful consideration of fifteen cases under his own care. He inclines to the view that in lymphadenoma the patient's lymphoid tissues are specially liable to general attack by tubercle bacilli which have been robbed of their acid-fast and more aggressive properties by the action of lymphocytes in the lymphatic glands. The action of *x* rays is discussed, but no reference to radium is made. As a symptomatic remedy for fever the author has for years recommended half a drachm of pure creosote rubbed slowly into the skin of the axilla and has found this most efficacious in producing mild and continued sweating and fall of temperature; this method was employed by an old chemist who practised farriery in Cleveland many years ago, and occasionally tried his hand on human beings as well.

Since the last edition of Mr. LUSHINGTON'S book on the *Law of Affiliation and Bastardy* some seven years ago the powers formerly assigned to the Local Government Board have been made over to the Ministry of Health and case law on the subject has been enriched. Consequently a fourth edition[10] has now been published, its author being Mr. W. B. PURCHASE, a member of the medical profession as well as a barrister-at-law. His treatment of the subject is on all fours with the scheme of most legal handbooks. All the statutes bearing on the question are cited, and it is shown to what extent their various enactments cement, or modify, or repeal one another, and how their clauses and terms have been interpreted in various courts. Mr. Purchase's exposition of the case law is very clear, and it has been brought up to a date as recent as the beginning of the current year. Though written primarily for barristers and solicitors, there are times when a reference to the chapters on legal views on the subject of gestation and of legitimacy would be found useful by medical men.

The address on the electrical structure of matter, a detailed report of which was published in our issue of September 15th (p. 474), delivered by Sir Ernest Rutherford as president of the British Association this year, together with the addresses of the presidents of the sections, have been published for the Association by Mr. John Murray in a paper-covered volume, entitled *The Advancement of Science.*[11] It contains 286 pages, and is illustrated by a few drawings and charts. The addresses this year may be taken as together forming a survey of the present position of most departments of science; the volume can be read with interest and is well worthy of preservation.

[9] *Hodgkin's Disease.* By R. Allan Bennett, M.D.Lond., M.R.C.P. Bristol: John Wright and Sons, Ltd.; London: Simpkin, Marshall, Hamilton, Kent and Co., Ltd. 1923. (Cr. 8vo, pp. 56. 2s. net.)

[10] *The Law of Affiliation and Bastardy.* By Guy Lushington, Barrister-at-Law. Fourth edition by W. B. Purchase, M.A., M.B., D.P.H., Barrister-at-Law. London: Butterworth and Co., and Shaw and Sons, Ltd. 1923. (Cr. 8vo, pp. xvii + 174 + 13. 10s. 6d. net.)

[11] *The Advancement of Science.* 1923. London: John Murray. (Demy 8vo. 6s. net.)

British Medical Journal.

SATURDAY, SEPTEMBER 29TH, 1923.

THE STATE OF THE PUBLIC HEALTH.

THE annual report of the Chief Medical Officer of the central Government department concerned with the public health has always been studied with interest by the medical profession from the time when Sir John Simon, the first incumbent of such an office, was writing his pioneer reports for the Privy Council, through the long series of annual reports presented by succeeding principal medical officers of the Local Government Board, to the most recent presented by Sir George Newman to the Minister of Health; it is his fourth as Chief Medical Officer to the Ministry, but the sixty-fifth of a series in which the growth of the science and art of hygiene may clearly be followed. The general scope of the new report can be gathered from the analysis begun in our last issue and concluded in this (p. 578).

Looking back on the series we may clearly see a shifting of the central interest. The earlier reports were concerned largely with the principles of administration—the need for central and local authorities to supervise and control municipal sanitation, their constitution, their finances, and the definition of their duties and powers. Then came a long period during which the central Government department and the larger local authorities were concerned chiefly with disease in the mass, with water-borne disease in particular, and great cities such as Glasgow, Manchester, Liverpool, and Birmingham undertook huge and costly engineering works, not unworthy of the Romans, to provide themselves with an abundant supply of pure water. It was at this stage that the work of the British Medical Association, of the Army Medical School, of voluntary organizations, and of many public-spirited members of the medical profession, was of such incalculable value in educating our rulers and administrators, so preparing the way for the creation of a Ministry of Health. The very name marked an epoch, indicating that the preservation of health and the prevention of disease was to be the primary duty of an important ministry of State, and no longer of a subsidiary section of a department mainly concerned with other matters which, to the Minister and the permanent officials, seemed to be of greater consequence.

During all this middle period Great Britain, and England in particular, was not only learning great lessons, but teaching them to the world. The application of large generalizations based frequently on a kind of intuition seems particularly congenial to the English mind, which is at once imaginative and practical, but not logical. The results obtained on a wide front in Great Britain were arresting, and the interest of foreign nations thus aroused was confirmed by the foundation and growth of the new science of bacteriology, which was able to explain some of the British generalizations and to give greater precision to matters of detail. It was, of course, very soon seen that certain problems were the same for all European countries and for parts of North America, and very similar in respect of the introduction of exotic epidemic diseases. For the discussion of this last matter the medical department of the Local Government Board had already begun the collection of material, and for many years the late Dr. Netten Radcliffe in annual articles kept track of cholera, plague, and many other diseases, recording the rise and fall of endemic prevalence and the origin, spread, and decline of epidemics. Presently international sanitary conferences began to be held, the Office International d'Hygiène Publique was established in Paris, and the Port Sanitary Service came into existence here. This international stir was another reason why we should provide ourselves with a Ministry of Health. The Intelligence Division is now an important part of the Ministry, collecting information—administrative, legislative, or statistical—which helps the due discharge by this country of its obligations in international as well as national affairs.

We seem now to be entering on a new stage, and in the report of the Chief Medical Officer for 1922 much emphasis is laid on the duty of the individual citizen. It is an old and well established principle of law that a man must not so conduct his home or his business as to injure his neighbour, and sanitary laws consist of little more than application of this general principle to the prevention of common violations of it. From the creation of machinery for mass sanitation we passed to the prevention of disease in the mass; now we have begun to require the individual to safeguard his own health and the health of his family. We pass from individual rights to individual duties.

Sir George Newman has not hesitated to use the argument *ad hominem*. In public and private medicine, he writes, the assent of the individual is needful "if the individual is to reap his full advantage, and at the same time to act loyally as a member of the community; in fact, he is under obligation to cultivate his own health and capacity, and so to conduct himself as not to conduce to the hurt or risk of his neighbours."

Finally, as was to be expected, we are presented with the argument *ad crumenam*—if it pays the individual to look after his own health and the health of his children and of the mother of his children, it will pay the State to help him to do so. But times are hard, and the difficulty about schemes for promoting individual hygiene is that the expenditure on them is new and obvious to the individual ratepayer. Not the most short-sighted of municipal economists will propose to scrap the waterworks at Loch Katrine, Thirlmere, Rhayader, or Vyrnwy, and leave Glasgow, Manchester, Liverpool, and Birmingham without water, but it is quite easy to nibble at estimates for clinics. The Ministry of Health, we are told by its Chief Medical Officer, is being very careful about money, and has taken steps "to advise local authorities on the financial aspects of their work"—a phrase to be interpreted as we will; but Sir George Newman is no defender of economy at any price, and we may take leave of his report by quoting its concluding sentences. "If the public expenditure on the health of the nation is every year saving the lives of many thousands, as this Report shows, and if it is prolonging the life of others, or increasing or continuing their capacity for productive work, as is absolutely certain, I submit that it is an economical and profitable expenditure in the correct sense of the terms. For the truest national economy at this moment is to spend productively and increase the earning capacity of the individual."

CANCER RESEARCH.

IN the proceedings of the Section of Surgery at the Annual Meeting, printed in this issue, in Sir George Newman's report for 1922, as noted last week, and in the *Rapport préliminaire* just issued by the Office International d'Hygiène Publique,[1] are suggestions for research work which, we think, deserve both support and encouragement.

We intend no disrespect to the many distinguished epidemiologists, statisticians, and clinicians who have contributed to the large literature of cancer when we say that their results have not been impressive. They have perhaps failed to be impressive because too often the field attempted to be covered has been so vast that the objects contained in it have not been distinct; all that has been created has been a general impression either vaguely alarming or vaguely reassuring.

In the documents to which we have referred above it is urged that investigations should be more specific. Mr. Herbert Paterson asks for "convincing evidence that the proportion of ultimate successes" after operations for cancer "is greater than was the case twenty years ago," and speaks of a "growing feeling of disappointment and dissatisfaction with regard to the treatment of cancer." Upon one point—the treatment of laryngeal cancer—Sir StClair Thomson was able to furnish very encouraging evidence, but there is no doubt that the assessment of results of treatment as a whole does require critical attention and a standardization of the material.

The Departmental Committee of the Ministry of Health and the commission appointed jointly by the Office International and the Health Section of the League of Nations have still more precisely localized their point of attack. In the first place, it was pointed out in an earlier memorandum presented to the Office International by the British delegate, Sir George Buchanan, that the rates of mortality from cancer of the breast and uterus in England and Wales, Holland, and Italy were very different, being much higher in England and Wales than in the other countries, although the rates of mortality from all forms of cancer in England and Wales and Holland were not dissimilar. It was suggested that the statistical experts of the various countries should first determine whether these striking differences were explicable on purely statistical grounds—that is, as consequences of varying accuracy of certification. The suggestion to inquire in this direction was accepted, and in a further report, presented during the following session of the Office, which contains valuable memoranda from the statistical departments of ten countries, it is concluded that the differences found to exist are not mere paper differences, but proofs that the fatal incidence of the particular forms of cancer under notice is indeed unequal in the three countries.

This conclusion having been reached, there was a strong case in favour of attempting to account for the differences, and, as briefly indicated in Sir George Newman's report, a further inquiry has been set on foot.

The line this inquiry, which is controlled by a strong committee representative of the three nations concerned under the chairmanship of Sir George Buchanan, will take is, we understand, the following. The various hypotheses adequate to explain the facts will be tested in order of *a priori* likelihood. Thus, the explanation having the greatest such probability in its favour is that in the countries experiencing a relatively low incidence of fatal cancer of the breast and uterus either the proportion of attacked persons who submit themselves to operative treatment is larger, or the average previous duration of the disease in those seeking treatment is shorter, or both factors operate to the advantage of the less afflicted nations. The testing of this hypothesis will involve a careful comparison of the hospital experiences of the three countries—a statistico-clinical research involving the close co-operation of practitioners and vital statisticians. If it be found that data thus accumulated do not establish any sensible difference between the nations in the matter either of frequency or date of treatment, the comparative frequency of possible etiological factors will fall to be considered. Data for this inquiry will naturally be collected simultaneously with those of a more restricted scope. In this way, advancing slowly, step by step, testing each conclusion reached in the light of clinical and statistical knowledge, it may fairly be expected that definite additions to knowledge will be secured.

We have no doubt at all that this is the right plan of campaign for a clinico-statistical research—namely, a very careful delimitation of its objectives and the fullest possible co-ordination of different arms of the service. This is an admirable choice of subject for international research work—it avoids, on the one hand, the delegation to an international body of studies which can be as well carried out in particular universities or national departments or even by private individuals, and, on the other, the common vice of proposing for solution some immense problem which is beyond the reach of any existing means of investigation.

[1] *Bulletin de l'Office Intern. Hyg. Publique*, xv, 1923, 738.

LIVE ANATOMY.

No movement in modern British medicine is more welcome than that led by some of our younger anatomists who have caught the spirit of Sir Charles Bell and returned to the teaching of living, functional anatomy. A member of this group is Dr. S. E. Whitnall, who until he was called from Oxford to succeed Sir Auckland Geddes in the chair of anatomy at McGill University was known to his British colleagues for his researches into the anatomy of the eye and orbit, and more especially for his gift of covering a great seriousness of purpose by a happy sense of wit and humour. At Oxford he became imbued with the learned humanity which animated one of his teachers—Sir William Osler—and this spirit he has carried back to Sir William's Dominion and allowed it to bubble freely over into a little book which he has entitled *The Study of Anatomy*, intending it for his own students.[1] It deserves a much wider circle; we hope it may spread into every medical school where the English tongue is spoken, for it contains happily expressed precepts which young and old will find helpful and stimulating. The essential lesson Professor Whitnall wishes to press home to medical students is that, on entering the dissecting room, they must keep their imagination as sharp and as lively as their scalpels, and on entering the hospital wards they must keep the same faculty equally alert when they palpate, percuss, or auscultate, if they are to reach the source of illness. The beginner, he says, who looks on the skin of his "part" as merely something which has to be removed is wasting his opportunities unless he also remembers that it is a living sentient organ endowed with functions which are essential to health and life. The student who has displayed all the structures of his part

[1] *The Study of Anatomy.* Written for second year medical students. By S. E. Whitnall, M.A., M.D.Oxon. Montreal: Renouf Publishing Company. 1923. (Double Cr. 8vo, pp. 46. 2s. 6d.)

and has failed to breathe his imagination on them, so as to make them live and move, is in the position of a man who has cut the leaves of a book and thrown it away unread. Our author would have medical students and medical men, as each manifestation of structure or of disease meets their attention, ask themselves a perpetual "Why?" and never rest until they find a reasonable answer or explanation. He would have his students, as they examine sections under the microscope, to remember that what they see are artificial snapshots of the living units which carry on the work of the body. Above all, he would have medical students, in these days of crowded curricula, cultivate a sense of perspective, and discriminate between the important and the unimportant. The tradition which has clung to our British chairs of anatomy—that their occupants should be men of wide interests—finds a true representative in Professor Whitnall. In this booklet he places at his pupils' disposal a rich experience gleaned from a close study of how men should order their careers if they would take the best out of life.

WATER POISONING.

THE toxicity of pure, fresh, or distilled water for fish, for isolated organs, and for unicellular organisms has been investigated since the time of Paul Bert, who in 1866 ascribed the toxic effect of fresh water on mullet to the difference in osmotic pressure between fresh and sea water causing the tissues to absorb water in excess. A short time ago (June 9th, p. 986) we gave an account of the results of an inquiry by Dr. J. S. Haldane and Mr. K. N. Moss on the effects of high temperature and muscular exertion upon colliers and stokers, from which it appeared that the ingestion of unusual quantities of water might lead to attacks of cramp, spoken of as "miner's cramp" or "stoker's cramp," believed to be due to a form of water poisoning of the muscles brought about by the combination of great loss of chloride by sweating, excessive drinking of water, and temporary paralysis of the renal excretion. Last year Larson, Weir, and Rowntree described a peculiar form of intoxication in patients with diabetes insipidus, who after hypodermic injection of pituitary extract continued to drink the same quantities of water that they had previously been accustomed to take. Within a few hours these patients manifested severe toxic symptoms—headache, nausea, asthenia, inco-ordination, and staggering gait. After some experiments on animals the authors concluded that this intoxication could not be induced by water alone or by pituitrin alone, but only by a combination of the two. Rowntree[1] has now published the results of a further research on the production of water intoxication in dogs, cats, rabbits, and guinea-pigs without injection of pituitary extract; it therefore appears that pituitary extract favours the occurrence of water intoxication by lessening the rate of excretion and lowering the rate of water exchange, or by facilitating the escape of water from the vascular system into the tissues, but is not an essential factor when the intake of water exceeds the excretory power of the organism. Large quantities (50 c.cm. per kilogram of body weight) were given by a stomach tube every half-hour. In dogs the phenomena were asthenia, restlessness, frequent micturition, nausea, retching, vomiting, salivation, muscular twitching, ataxia, convulsions resembling those of strychnine poisoning, frothing at the mouth, and stupor or coma terminating in death or recovery in a few hours (four to twelve). A subacute form lasting for some days was produced in rabbits by the administration of smaller quantities of water continued over a longer time. Intravenous injection of hypertonic (10 per cent.) salt solution was found to prevent or to remove water intoxication. One experiment on a dog with water intoxication showed that the intracranial pressure was raised, and Rowntree considers it probable that this is, in part at least, responsible for the symptoms, and that the increased intracranial pressure probably depends on a disturbance of the salt to water equilibrium of the central nervous system.

[1] Rowntree, L. G.: *Arch. Int. Med.*, Chicago, 1923, xxxii, 157-174.

PUBLIC HEALTH IN INDIA.

WE have received from Dr. N. H. Choksy, C.I.E., of Bombay, a reprint of seven articles which he contributed to the *Times of India* during May and June of this year on plague in India and other cognate subjects. Dr. Choksy, whose name is well known in connexion with the study of infectious diseases in India as medical superintendent of the Arthur Road Plague and Infectious Diseases Hospital and the Martha Plague Hospital, Bombay, explains in a short preface that his object in writing the articles was to focus public attention on the ravages of plague in India during the last twenty-five years, to consider whether there is any probability of eradicating the disease at an early date, and to show that nothing had been done by the Government of India to discover a remedy for it. He has also been anxious to obtain concerted and co-ordinated action in order to combat the excessive mortality in India, not only from plague, but also from a number of other preventable diseases. The Indian Red Cross Society, which has attempted to do so, can only touch, he very justly remarks, the fringe of the problem even by the most strenuous efforts. Its resources, amounting as they do to less than five lakhs of rupees annually, could not cope with the needs of a vast continent like India. Dr. Choksy therefore appeals to the Government to take control, and suggests that a special sanitary, preventive, and curative service under a Ministry of Health should be established in each province, and that through it provincial legislatures and the Legislative Assembly should devise measures for dealing with the abolition of plague and the control of other diseases. Although Dr. Choksy's articles cover ground already well traversed and explored, they are of great value as an effort to arouse public opinion in India and awaken the masses to the need of more active co-operation in sanitary measures. As he very truly says, the masses in India are not yet ready to assimilate the lessons of an intensive campaign of sanitary education. What they require is actual and concrete demonstration of the benefits promised and implied, and he pleads for such actual demonstration to accompany, or better still to precede, any intensive campaign of instruction. Without question he is applying his knowledge and influence in the right direction. He has no illusions about the difficulties of the sanitary problems in the present condition of housing in Indian rural districts, which he aptly compares with the material and social conditions in England when, centuries ago, plague was one of the most dreaded scourges. He considers that freedom from plague for ten or fifteen years is no guarantee of its complete extinction. Any policy based upon such an assumption is foredoomed to failure. Wholesale rat destruction throughout India, the one and only complete measure, is too stupendous a task to be a practical proposition at present. What India really wants is a special sanitary service as distinct from the existing provision of medical relief—a service, that is to say, which is broadcast over all India and working continuously. This requires an adequate staff of trained men, schools of hygiene, provincial cadres forming a number of flying columns to be dispatched at once to localities where an outbreak of plague is threatened, a provincial health service, with a director and assistants and deputy assistants of public health, a Ministry of Health in each province with expert advisers, and a public health commissioner with the central Government to consider

problems affecting India as a whole, to co-ordinate the work of provinces, and to be the channel of communication between India and other parts of the world. Dr. Choksy's articles have thus the merit of propounding a constructive policy, and it is a policy with which hygienists generally are likely to agree. It has also the merit of being evolved and strenuously advocated by one whose medical education has been indigenous, and who is intimately acquainted with the political and medical history of his country, its possibilities and aspirations, and the social and sanitary conditions which form such an obstacle to comprehensive and effective measures of public health.

THE MEDICAL HISTORY OF THE WAR.

THE volume on pathology[1] in the official Medical History of the Great War has been issued, and will probably prove to be not the least interesting of the series. There still remain to be issued three volumes containing accounts of the administration, organization, and employment of the medical services in all theatres of war; but the new volume completes the account of what may be called the scientific aspects of the work of the medical services. We congratulate Major-General Sir W. G. Macpherson, K.C.M.G., editor-in-chief of the series, on the completion of a laborious and anxious duty. The first volume, issued at the end of 1921, contained a general review of the task set to the medical services and the manner in which it was met; this was followed by two volumes on diseases of the war and two on the surgery of the war. Recently two volumes have been issued on the hygiene of the war; they were reviewed in our last issue. The series is issued by the Stationery Office, and the volumes can be obtained through any bookseller. They are well printed, reasonably well bound, are of a form convenient for holding in the hand, and are fairly well illustrated. In some instances the names of those who have assisted Sir William Macpherson in editing a volume have been given, and in all a list of contributors is inserted. Each volume is divided into chapters in the ordinary way, and here we cannot help feeling that the interest of the volumes and the ease with which they may be consulted will be diminished by the fact that the names of the authors are not prefixed to the chapters. In some instances a single chapter has been composed or revised by several writers; in others it appears that the whole of a chapter is from one hand. For example, a note issued by the War Office states that Sir W. B. Leishman has contributed to the volume on pathology the first chapter, which is on the organization of the pathological services, and that it is founded on his own experience as adviser on pathology on the Western Front throughout the war. The same note gives also the names of several other authors, and by a study of the list of contributors we can ascertain that Sir Almroth Wright is the author of a chapter on the physiology of wounds, and that Professor Clifford Dobell and Colonel W. Harvey, C.M.G., formerly Deputy Director of Pathology at the War Office, are jointly responsible for the chapter on the pathology of dysentery. But in other volumes, and even in this, it has not always been easy to ascertain by comparing the list of contributors with the headings of chapters what writer was responsible for what chapter; this has been a pitfall for reviewers, as we have found by some unfortunate experiences; the most recent was the inadvertent attribution of the whole of the chapter on skin diseases in the second volume of *Diseases of the War* to Dr. Henry MacCormac. Reference to the list of contributors shows that Dr. A. M. H. Gray, who, like Dr. MacCormac, was a consulting dermatologist with the British forces in France, joined with him in writing the chapter, and that Major J. A. Manifold, assistant professor of pathology R.A.M. College, was responsible for the greater part of the section on tropical skin diseases, and Major T. J. Mitchell, R.A.M.C., for the paragraphs on Oriental sore. Having delivered ourselves of this grumble we hasten to add that the series is a most valuable contribution, not only to military medicine, but to medicine in its widest sense. It is a mine of information into which future inquirers and writers will often delve.

[1] *History of the Great War, Based on Official Documents: Medical Services. Pathology.* Edited by Major-General Sir W. G. Macpherson, K.C.M.G., C.B., LL.D., Major-General Sir W. B. Leishman, K.C.M.G., C.B., F.R.S., LL.D., and Colonel S. L. Cummins, C.B., C.M.G., LL.D. London: His Majesty's Stationery Office. 1923. (Demy 8vo, pp. 600; illustrated. £1 1s. net, post free £1 1s. 9d.)

TRAUMATIC OBLIVION.

A SHORT time ago the rider of a motor cycle who had knocked down and killed a man affirmed that he could not recollect anything of the accident, and evidence was given by a medical witness in support of the story. After a blow on the head severe enough to produce unconsciousness it is very frequent—it may almost be said to be the rule—for the injured person to find that he is not only oblivious of what happened during the time that he was unconscious, but also that he has no memory whatever of what happened for some time previous to the blow on the head. Moreover, afterwards he may perform ordered acts and forget all about them. There may be a complete lapse of memory between a short time before the accident and some hours, or even days, afterwards. The memory of these pre-traumatic experiences sometimes returns in a fragmentary manner, but more often it is permanently lost. The case we have mentioned has led a correspondent (Mr. Hubert Visick) to send us the story of his own experience when a student at Guy's. He had gone from lodgings at Streatham on a Saturday morning to skate near Guildford; while playing hockey he tripped and fell, cutting his eyebrow. He was picked up, but refused all assistance; skated to the side of the pond, removed his skates, and walked to his uncle's house, a distance of a mile. While his head was being bathed he suddenly became conscious of his surroundings, and was much astonished to find himself where he was, having no recollection of leaving his lodgings at Streatham. He has never recovered the memory of the events which happened between going to bed on Friday night and Saturday afternoon. During the interval after the fall his demeanour did not suggest anything unusual to his friends, who said that he talked rationally on the way to the house. In an article published in our columns eight years ago (September 18th, 1915, p. 445), which we may now say was written by the late Dr. Charles Mercier, he suggested an explanation of pre-traumatic oblivion. It is generally assumed that every experience of which we are conscious produces a modification in the finer elements of structure in the cerebrum; that is to say, that the conscious memory of an experience answers to a structural modification of some kind. It may be assumed also that the brain possesses the physical quality of elasticity; that is to say, that its structural elements not only oppose resistance to disturbance, but, when disturbed, tend in certain circumstances to resume their original positions. When under the action of sense impressions, or otherwise, the structural elements of the brain are shifted into new positions a considerable proportion—it may be the whole or almost the whole of them—resume their original positions after longer or shorter intervals. This is only to say that we never remember all we see, or hear, or otherwise experience, that of much we experience we retain only a remnant, and that the process of forgetting begins as soon as the experience is over, and thereafter continues at a varying rate. Sleep has a twofold effect on memories—some it fixes, some it wipes out—and this fact has some bearing on the subject under consideration. Imagine a brain, in the course of experiencing new impressions and of registering

these impressions in its structure, to be violently shaken by a blow on the skull; the whole delicate structure will be thrown out of gear, and the immediate result is the total abolition of consciousness. Soon, however, if the blow be not too severe, the shaken elements go back to their places and consciousness returns. But in the general shake-up some arrangements may be so badly shaken that they are altogether obliterated, and those most likely to be affected are those most recently formed or in the process of formation. This is a plausible explanation of both pre-traumatic and post-traumatic oblivion.

RESEARCH IN MENTAL HOSPITALS.

THE ninth annual report of the Board of Control,[1] which deals with the year 1922, is for the most part in the usual form, but it contains an appendix setting out more fully than is customary the research work that is being carried out in a number of mental hospitals with the encouragement of the Board, and also at the pathological laboratory of the Maudsley Hospital. Among the researches mentioned is that on the physiogenic origin of dementia praecox in the last named laboratory, upon which was founded Sir Frederick Mott's British Medical Association Lecture on the reproductive organs in relation to mental disorders published in our issue of March 25th, 1922, and those described in the article by Sir Frederick Mott and Dr. Isabel Hutton on the adrenals with special reference to dementia praecox, published in our issue of July 21st, 1923 (p. 95). The appendix also contains a rather long report from the West Riding Mental Hospital, Wakefield, by Drs. Shaw Bolton and McGrath on asylum dysentery and allied infections. Another report, by the medical officers of the Lancashire County Mental Hospital, gives a good idea of both the routine laboratory work and of certain studies of special subjects. The report itself contains a section dealing generally with the researches now in progress into the causes of mental disorder and defect. A reference is made to the establishment at Birmingham of a joint board of research, consisting of representatives of the University and of the City Mental Hospital Committee, and of the appointment of Sir Frederick Mott to be director of research and lecturer on psychotherapy in the University. The Board declares its readiness to help the establishment, in connexion with each university in England and Wales, of similar research centres having affiliated with them every neighbouring institution in which mental cases are received. These centres would serve as a link between other branches of medicine and the psychological branch, and would conduct researches which cannot be undertaken in a comparatively small clinical laboratory. At the same time the Board expresses the view that no mental hospital should be without a laboratory, and that arrangements should be made whereby work will be systematically carried on in each laboratory either by a member of the resident medical staff or by a part-time visiting medical officer. It is hoped that the establishment of research centres will conduce to the interchange of information, and facilitate comparison of the results obtained so as to avoid needless duplication of effort. We hope to return to this report and its appendices on an early occasion.

DRUNKENNESS.

THE annual blue book of licensing statistics for England and Wales for 1922 has been issued (Cmd. 1936, price 6s.). Convictions for drunkenness are not, of course, a completely satisfactory measure of the prevalence of the vice, as probably only very marked cases find their way into the police courts; yet so far as they go those for 1922 are encouraging. The convictions in England and Wales for 1922 numbered 76,347, a decrease of 1,442, or 1.85 per cent. The reduction was not uniform throughout the country; it was more marked in the North of England than elsewhere, the number of convictions having fallen from 41,624 in 1921 to 37,446 in 1922, a reduction of 11.16 per cent. The story of Greater London, however, was different, for the total number of convictions reached 31,333, as against 27,788 in 1921, an increase of 3,545, or 12.6 per cent. In the rest of England and Wales the figures showed very little variation—less than 1 per cent. Taking the whole country, the total number of men convicted for drunkenness was 63,253, and of women 13,094; the figures for men show a decrease of nearly 3 per cent., those for women an increase of nearly 2 per cent. In both sexes there is, however, a great increase as compared with 1918. It is suggested that the decrease in the North of England may be due to the pressure of unemployment, whereas this factor in London did not operate to anything like the same extent. Since the Act of 1904 came into operation the number of licensed houses has greatly decreased, but there are still nearly 28 licensed premises per 10,000 persons (21.50 on-licences and 5.79 off-licences). The rate of decrease of both classes of licences has diminished in recent years; the average for the seventeen years 1905-21 was 1,025. The decrease in 1922 will probably prove to be about 585. On the other hand, the number of registered clubs is now 10,663, an increase of 4,292 since 1904, and the highest total since the system of registration has been in operation. The increase in the number of registered clubs since 1904 is to be compared with the decrease in on-licences of about 18,000. Among the convictions for drunkenness during 1922 the consumption of methylated spirits was assigned as the cause in 516 cases. The figures bearing on this have only been collected since 1920, but those for last year showed a considerable increase, chiefly in males. They do not, however, constitute any considerable proportion of the total number of convictions, the percentage in the country generally being 0.7, and in the metropolitan police district 0.3. A general examination of the figures for convictions for drunkenness during recent years appears to show that when trade is good and employment and money plentiful the convictions are more numerous than in bad times.

THE ROTUNDA HOSPITAL, DUBLIN.

THE Rotunda Hospital statistics for the year November, 1921—October, 1922, compiled by Drs. Gibbon Fitzgibbon, J. S. Quin, and G. W. Theobald,[1] show a decrease of 200 admissions and 51 confinements in the hospital, but the extern confinements increased by 296. The mortality for indoor cases was 8 deaths in 1,715 cases. In the 2,022 cases attended outside there were 10 deaths, 5 of which were due to post-partum haemorrhage; in all of these the child was born before the arrival of the attending students, and in 4 the patient was moribund when first seen. Five cases of ante-partum bleeding occurring in the outdoor district were "packed" before being sent into hospital, without any untoward results, showing that packing could be performed aseptically even under bad conditions. Regarding the statistics for abnormalities connected with pregnancy and labour, the cases of placenta praevia and eclampsia during the year were very few, only 19 of the former and 14 of the latter; as no maternal deaths occurred in any case suffering from either complication the results are extremely satisfactory. With regard to vaginal plugging for placenta praevia—in accordance with the Rotunda doctrine—Dr. Fitzgibbon and his colleagues state that much doubt has been cast on the efficiency of this method and that many cases of sepsis have been quoted; they assert, however, that this is due in the first place to inefficient plugging (cotton-wool pledgets should always be used, and not gauze or other material), and in the second place to the packing being

[1] H.M. Stationery Office. To be obtained through any bookseller. Price 7s.

[1] *Irish Journal of Medical Science*, July, 1923.

done when the cervix is open, and thus passed into the uterus. They point out, again, that no packing should pass through the cervix, as the raw area in the lower uterine segment is easily infected. In some other schools, however, plugging is very rarely practised in cases of placenta praevia, because usually the cervix, when the condition is diagnosed, will admit two fingers, and then it is definitely contra-indicated, as version can be performed. The number of abdominal pregnancies—four, with two living children and only one maternal death—is very interesting, as this rare complication is seldom seen. With regard to operative procedures, Caesarean section was performed in twelve cases only, showing that the operation is not undertaken without due consideration. In cases operated on for the first time, the lower uterine segment operation was always employed. There were no deaths from Caesarean section. Pubiotomy was performed on eight occasions, with one maternal and four infantile deaths. This latter operation is undertaken, however, at the Rotunda Hospital somewhat more frequently than is usual elsewhere, and is performed instead of craniotomy for contracted pelvis if the child is thought to be alive. After the pubic bone has been divided labour is allowed to progress naturally, forceps are not applied, and the child delivered at the time of the operation; thus in two cases labour went on for eleven to fourteen hours after division of the bone, the infant succumbing in both cases. Induction of premature labour for contracted pelvis is favoured in suitable cases, a 30-inch No. 24 stomach tube (soft rubber) being employed instead of bougies, as the tube can be sterilized more thoroughly. Sea-tangle tents are used for induction before the twenty-eighth week. Dr. Fitzgibbon and his colleagues advise that several tents should be used instead of one large tent, and that they should all be introduced through the internal os. In the treatment of hydatid moles, of which six instances occurred during the year, curettage with a flushing curette is advised seven days after removal of the mole, whether it came away spontaneously or not, as there is always a large amount of débris in the uterus. The operation can, it is stated, usually be performed easily without an anaesthetic. Besides the maternity cases, 433 gynaecological cases were treated and 325 operations performed in the hospital, the mortality being 2.2 per cent.

KITCHENER MEMORIAL MEDICAL SCHOOL AT KHARTUM.

THE account which Dr. O. F. H. Atkey, Director of the Medical Department, Sudan, gives us at page 581 of the scheme of the Kitchener Memorial Medical School at Khartum more than justifies the appeal which is about to be made in this country for contributions to an endowment fund. The idea of the school was conceived by Lord Kitchener during his last visit to the Sudan, and it will help to complete the educational scheme he initiated when he founded the Gordon Memorial College immediately after the battle of Omdurman. In doing so he showed his faith in the people of the Sudan at a time when the country was desolated by war, famine, and disease. He knew them well and appreciated their qualities. Except in the extreme south the Sudan is inhabited by an Arab race possessing something of the intelligence and love of knowledge which through mediaeval times kept alive the torch when medicine, and science generally, throughout Europe were in eclipse. The people of the Sudan to-day have shown their approval of the project in a most practical way, by themselves subscribing over £11,000 and by other gifts. Up to date all expenditure has been met, and £20,000 has been subscribed towards the endowment fund. The appeal is now for £40,000 to complete the fund, which will be devoted to maintenance and to meet the cost of an adequate teaching staff. At present teaching is carried on by members of the Government medical service, but they have other duties, and the plan is obviously only a makeshift. The need for a larger staff is indeed urgent, since at present it will only be possible to accept twelve students a year, but it is clearly desirable to make provision as soon as possible for a much larger number, all of whom, it may be expected, will quickly be absorbed. From a medical point of view the scheme seems to be framed on right lines. Students are to be given a sound training in modern medicine up to a certain definite standard, so that if later on they can be brought back to the school it will be possible for them to resume their training without having to unlearn anything. Eventually it is intended, when the staff can be made adequate, to extend the curriculum to five years, and it is hoped that before very long the school will take a leading part in the civilization and development of north-east and central Africa, and, working on the same lines as those followed by the medical schools of Europe and America, produce really good scientific work.

THE CENTENARY OF THE "LANCET."

ON Sunday, October 5th, 1823, the first number of the *Lancet* appeared, and in celebration of the event a special number of the journal will be issued on October 6th, and a centenary dinner will be held in London on the evening of Thursday, November 29th, at the Hotel Victoria, Northumberland Avenue, London, W.C., at 7.30 for 8 p.m. Sir Donald MacAlister, President of the General Medical Council, will take the chair, and will be supported by the Presidents of the Royal Society, the Royal Colleges of Physicians of London, Edinburgh, and Dublin, the Royal Colleges of Surgeons of England, Scotland, and in Ireland, the Chief Medical Officer of the Ministry of Health, the President of the British Medical Association, and the Presidents of the Royal Society of Medicine and of the Medical Society of London. The Minister of Health has signified his intention of being present, and it is hoped that a gathering representative of all the interests associated with the medical profession will meet on this occasion. Those who desire to be present should communicate at their early convenience with Mr. H. D. Gillies or Dr. J. H. W. Laing (honorary secretaries) at 7, Portland Place, London, W.1. The charge for the dinner has been fixed at 15s., exclusive of wines, and if notice be given in advance endeavour will be made to arrange that friends who so desire shall sit together.

AN ANTIVACCINATION FALLACY.

ANTIVACCINATION fallacies are so numerous—or numberless—that one more or less does not matter, but lately special emphasis has been laid on the fact that vaccination and small-pox have been declining together for years past. Of course they have, and when small-pox reappears, as recently in many parts of the country, vaccinations also mount up. Under voluntary vaccination that will always be so. There is no teacher of vaccination like small-pox, and the "anti" advocate will always be able to point out that when small-pox abounded vaccination abounded, and vice versa. The only fallacy is that cause is substituted for effect and effect for cause—which is a mere trifle to the antivaccination intellect. It is because small-pox is absent that vaccination is at a low ebb, and when small-pox returns so will vaccination.

SIR ARCHIBALD GARROD, M.D., F.R.S., Regius Professor of Medicine in the University of Oxford, has been appointed a member of the Medical Research Council in succession to Professor F. Gowland Hopkins, F.R.S., who retires by rotation. The appointment of Sir Archibald Garrod was made by the Committee of the Privy Council for Medical Research, after consultation with the Medical Research Council and with the President of the Royal Society, by Order of Council dated September 11th, 1923.

MEDICAL EDUCATION:

A REVIEW OF SOME MODERN METHODS.

BY

SIR WILMOT P. HERRINGHAM, K.C.M.G., M.D.,

CONSULTING PHYSICIAN TO ST. BARTHOLOMEW'S HOSPITAL; MEMBER OF THE UNIVERSITY GRANTS COMMITTEE.

I.

THE institution of the medical and surgical units in London was an attempt, originally begun by the Board of Education and continued by the University Grants Committee, to give a more scientific character to medical education. Osler and others had criticized our teaching of the final subjects on the ground that it was too empirical, and had not incorporated the later discoveries of physiology. They had argued that it could not be improved in this respect unless some system was introduced by which men well versed in the latest work of the physiological and pathological laboratories could be placed in important teaching positions, under such conditions as would enable them to employ on the clinical problems of human disease the same methods as were in use among the physiologists and pathologists. They admitted that the clinical teachers were in touch with the heads of the laboratories and regularly sought their assistance, but they argued, and rightly, that to get the best teaching this was not enough. Men who had for years been engaged in clinical work and had been unable to take part in recent discovery were, they said, incapable of using themselves the laboratory methods now required to make fresh discoveries in medicine, and in consequence could not impress upon students either the exact bearing or the importance of such work. English teachers were excellent observers, and had rendered great service in distinguishing and describing diseases up to then confounded; but the science of medicine now required much more than bedside observation. Not only was observation itself largely transferred to the microscope, but also the laboratories had imported the methods of experiment and verification into many regions where observation had hitherto been employed alone, and with this change had arisen a different way of looking at clinical problems and a greater hope for their solution. In England no provisions existed such as were found in other countries whereby men could if they wished devote themselves rather to the study of disease and the teaching of students than to earning their living by seeing patients, and until there was some sufficient payment for such men not only would English education suffer, but also English medicine would not rank with that of other countries. A professorial system was advocated much like that in force throughout Germany, whereby a clinical division of the hospital, with properly equipped laboratories attached to it, should be placed under the control of a chief chosen for scientific distinction, around whom should be grouped a staff of younger men to be engaged in research under his guidance, and to assist him in the education of students.

These ideas, which were promulgated more than ten years ago, were approved by medical teachers and by the Board of Education, and steps were taken to bring them to a practical issue. But the war intervened, and nothing could be done at the time. As soon, however, as peace returned the Board of Education again took up the question, and began in a few of the London schools the trial of what is known as the unit system, in which these ideas were embodied. In 1919 the University Grants Committee took over the university work of the Board of Education, and continued its policy. Medical and surgical units have been established in five London schools, and an obstetrical and gynaecological unit in a sixth.

In London, owing to the peculiar relation of the medical schools to the University, the Board, and later the Grants Committee, granted money for the maintenance of the units directly to the school. But the University Grants Committee could only deal with the schools as schools of the University, and made its position and its policy clear by requiring that in all such cases as might originate under its sanction the director of the unit should be a professor of the University, and also by requesting the University to inspect the working of the units. The Grants Committee, as a committee of the Treasury, considered itself hardly fitted by its position to act as a committee of experts in education, and was also extremely desirous to maintain the autonomy of the universities and not to usurp functions properly belonging to them.

The experiment made in London roused great interest in the other universities of England and in those of Scotland. In none of those up to that date had the emoluments of the chair of medicine been sufficient to provide such a staff and equipment as was now established in London. Everywhere much discussion took place, and in many schools fresh schemes were adopted for the improvement of their teaching. Some made chairs with arrangements similar to those of the London units; others adopted different plans.

The chief difficulty lay in the position of the professor. He had not till then been expected to be more than a good teacher of the usual type. It was not universally accepted that a man with more laboratory knowledge was required, nor was it desired or even possible to displace the present occupants of the chairs. Nor again did the universities, which were very poor, feel able to spend the three or four thousand pounds which are required to maintain a complete unit of the London type. It must be added that the supply of men was not there even if there had been a demand for them. Since no such posts as these had existed previously, men had not trained themselves to occupy them. Those who had been interested in experimental science had gone into physiology or pathology, and had indeed cultivated a positive contempt for clinical medicine, because it was contaminated by the pecuniary interest of private practice. A few men in the schools, whose names will occur to everyone, had indeed combined experimental and clinical work, and in neurology a large amount of both had been carried out, though it had chiefly centred round a great special hospital which was not one of the undergraduate schools. But it cannot be said that clinical medicine had been as a whole marked by experimental research, and even pathology had not approached the position which English physiology had long held.

This lack of men will soon be supplied. In the London units and elsewhere there are now many young men at work, who are looking forward to a life of study in preference to a life of gain, and will make excellent professors and assistants of the kind intended. As soon as the life was made possible there was no lack of candidates. Such men are even now in demand to a certain extent, and will be more and more required as time goes on. The change has, moreover, already broken in upon the bad system of closing appointments to all but those locally trained, which has been a great hindrance to improvement. In more than one school an outsider has been appointed to an important position, and undoubtedly in future the need will more and more be felt to obtain the best men available from whatever source. There is no doubt that what may without exaggeration be described as a new spirit in clinical teaching will be permanent, and that public reputation and the demands of students themselves will ensure its retention and its growth.

II.

A certain amount of dispute has also centred round the conditions in which such a chair should be held. In London a professor of medicine is required to resign all private practice, and that stipulation has been adopted in some other universities. It saves a certain amount of opposition, since other members of the faculty feel a natural hesitation in voting a large salary to a colleague who will compete with them in practice. Some men, again, greatly dislike private practice, and will gladly give up the prospect of a

large income for the sake of an academic life. Such men also usually find that the work of a professor as they conceive it is so exacting that it leaves no time for anything else. It must be said that this monastic view of the professoriate of medicine has never been taken anywhere else than here and in a few American schools, and it is certainly unreasonable to insist upon it everywhere. There are, at any rate, other possibilities. A comparatively young man might, for instance, be elected for a limited number of years, on the understanding that after that he might resign his chair and take a practice, or that the university might think it better not to re-elect him. There is something to be said for such a plan, for a man's invention rapidly deteriorates, while his experience and his judgement advance, and this method might be a means, if not to give him the best of both worlds, at least to give both worlds the best of him. But it has also disadvantages which are equally obvious. Or, again, it might be preferred that the professor should be the embodiment of judgement and experience, and that the more imaginative qualities which are certainly needed should be supplied by an assistant, who should be placed above the necessity of practice.

Opinions will differ, too, as to the part which the professor should play in the school organization. At one school he may be given the charge of organizing the whole of the teaching in the final subjects, while in another he may be merely a colleague working alongside the other members of the staff, and on the same terms with them.

For some time to come circumstances will differ, and the plans adopted will differ accordingly. But, so far as the first of these points is concerned, it seems not unlikely that the best candidates for the chairs will themselves prefer an academic life and ask to be relieved from practice, while if they do so the universities will probably find means to render this possible.

The remainder of the staff is, in London itself, treated with even more variation. At one school the first assistant may have part of the day to himself, while the juniors are fully occupied; at another the reverse may happen, or the same school may vary its conditions at different times to suit the persons concerned. The more variation the better. The paid assistants are not, however, the only persons on the unit staff, for these units are centres to which are drawn not a few graduates from other countries, especially from Canada and the United States, who wish to come to Europe and to work under European teachers. In at least one instance a London professor has taken duty for a colleague in America, and the latter in his turn has acted temporarily for the professor here.

We may hope that the poverty of the universities, which sadly hinders the introduction of expensive changes, may gradually be relieved, though we can hardly expect to obtain the immense endowments which universities, and especially medical schools, have received of late years in America. In that country gifts to education have taken the place of those gifts to religion by which our forefathers sought to perpetuate their names in this world and to mitigate their sufferings in the next, and the restricted insight which leads men to prefer material benefits to others has turned such gifts almost entirely to the scientific, and chiefly to the medical departments. The same tendency is visible here, but the donors are less wealthy and are therefore ransomed at a smaller cost. In America, too, there are few other objects on which a man may spend largely; in the old world there are many; and since our Governments have not hitherto accounted public benefactions of this kind worthy of honour, public giving has turned rather to those channels which conduce to the rewards that good men naturally desire.

III.

It remains to consider the effect of recent changes upon the student. It was allowed, even by those who criticized the system then existing among us, that the practical instruction of the British and Scottish schools was probably the best in the world. Nowhere else was the feeling of responsibility, which is the best of all incentives to learning, so early developed as with us, and nowhere were general practitioners so competent. Our methods had been imported into American schools, and American physicians were unanimous in approving them. Criticism turned rather upon the future outlook of the men we trained. It was alleged, but on *a priori* grounds and without any attempt at comparison with other countries, that though they left the schools excellently equipped for practice they were not so trained in what may be called by contrast the theory of medicine as to lead them to pursue independent research in their daily work, or to assimilate for practical use the gradual advance of physiological and pathological discovery. It must be repeated that this was almost entirely founded upon what the critics thought our training would produce, rather than upon any actual observation of the conduct of the living, wriggling general practitioner himself in this and in other lands; and even so, no one wished that the practical excellence which was admitted to exist should be impaired, but it was desired to add to it a deeper study and a profounder view. Everyone acknowledged that it was of the first importance to the public that a man should know the clinical significance of what he saw or felt or heard in the patient's body, but the critics added that he should be trained continually to question the meaning of these phenomena, to refer them to wider physical laws, or to seek explanations in the most recent results of physiology and pathology.

The recent advances in these sciences have led to an astonishing increase of those methods of clinical observation which depend upon the test tube and the microscope. The student has many more ways of observing his patient than he had aforetime, and a complete account of any single case of disease is much longer and much more complicated than it used to be. The employment of new methods raises many fresh questions in his mind. He asks himself why this element in the blood is decreased or augmented, or why this constituent in the urine is absent or enormously in excess. His horizon is extended, and with the addition of each fresh phenomenon to the sum of his observations a fresh object is afforded to curiosity. All such fresh work is ill understood at first, but behind the outer fringe of new observations law gradually advances, consolidating—as the soldiers say—the territory won, classifying, reducing to regularity—or, as we call it, explaining the phenomena—and adding width and depth to the science of medicine.

It is, of course, true that these laboratory methods are on the one hand so laborious that few have time to continue them in after-life, and also need such constant exercise that to use them only occasionally as private practice offers is probably more dangerous than profitable. Yet a man who has used them and understood them will better realize what they mean and what they can effect. He will be able to some extent to form his own judgement on laboratory reports, and will not put a penny in the slot and expect an answer to all his difficulties.

Yet it must be acknowledged that there is a little to be said on the other side. The new labours entailed upon students undoubtedly diminish the time they can spare for the practice of the old methods. The time spent with the microscope is not spent with the stethoscope, and that given to the laboratory is so much taken away from the training of the eyes to see, the ears to hear, and the hands to feel the body itself. This is in a measure compensated by the greater labour of the teachers. The student is an instance of intensive cultivation. He is taken over his work by one teacher after another, and the effort is made by constant pressure to squeeze into him in a short time that which he used to absorb more slowly by himself. But there is no denying that something is lost by these methods. The student thinks less for himself.

Nor can it be denied that the multiplicity of the phenomena diminishes the consideration which can be paid to each. The horizon is vastly extended, but there is less opportunity to dwell upon any of its details. There is even some fear that the change may lead to the direct opposite of what was intended, and may, while greatly increasing the student's information, tend to a more superficial rather than to a profounder habit of thought.

This has led some to question whether all that can be

required of the student can usefully be expected of him within the years of his student course. Claims have of late years been put forward that in the final examination questions should be put upon various special branches of practice. Specialists have upheld the importance of their particular specialties, and have stated the dangers that ignorance of them involves. But the authorities have shown a tendency to answer that the student cannot be expected to know the prophets as well as the law, and that under present conditions some subjects must inevitably be left for special study after qualification.

This leads naturally to the question what effect the increasing subdivision of medicine and surgery has upon education. In some ways it is beneficial. No doubt a man who treats one organ or one class of diseases sees more examples of it and can study it more fully than one in more general practice. This is of advantage both for pathology and for treatment, and both patients and students reap the benefit. And since each organ or disease can afford examples of the wider laws of pathology, subdivision does not necessarily cramp the view of either teacher or student. Indeed, it may be argued that it improves it, for the student seeing, for instance, the effect of inflammation in various conditions which are clearly separated for him, gains perhaps a more distinct idea of the process than from a confused medley of cases. He can compare its effects in syphilis and tubercle, or see it exemplified in the skin and in nervous centres.

Yet there is a weakness in the present system to be set against its gains. In former times the hospital was more or less representative of ordinary practice. In the out-patient room and the wards taken together most of the problems were exemplified which would present themselves in later life, and, as in later life, they were presented unexpectedly. The patient might be suffering from almost any kind of disease, and the student had to keep his clinical knowledge ready and in constant use. He was expected to give a careful account of the patient's symptoms, and though in most cases he was not expected to form a diagnosis, yet he constantly endeavoured to do so, and in this way was always practising himself in the same processes of thought as he would pursue in later life.

It is different now. He knows that when he is in the V.D. clinic he will see syphilis and gonorrhoea, and in the tuberculosis department cases of that disease, whereas he will hardly see a case of either in the rest of the hospital. He is not, therefore, as he used to be, continually on the look-out for these diseases in the general wards or in the out-patient room, and he is so much the less practised in diagnosis. In fact, to a considerable extent he postpones the practice of diagnosis to the time at which he enters upon an independent position, and finds that he is obliged to sort his patients for himself.

IV.

In this matter there are two directly opposite opinions current among those who theorize upon education. British teaching placed diagnosis very high in the scale of medical duties. It was considered of the first necessity to find out what was the matter with the patient, and the student's mind was directed to this end throughout his examination of the case. It must not be thought that he was allowed to jump to conclusions. The very contrary was the fact. It was constantly impressed upon him that his examination must be as complete as possible, and his constant fear was lest his master should discover omissions in his notes and censure him for negligence, or, still worse, for forming an opinion without having taken the pains to guard it by sufficient observation. He was constantly warned that in practice more mistakes were due to want of observation than to want of skill, and the criticism of his teacher was invariably directed to the inaccuracy of his notes rather than to the incorrectness of his diagnosis. In so far as precept and example could, he was made to understand that the first requisite of a physician was accuracy in observation.

But, on the other hand, he was taught that while in many cases judgement should be held in suspense, a diagnosis was the object to which observation was directed. His examinations and his notes were not made for the mere purpose of making them, but with this end in view. Nor was it thought necessary, it must be allowed, to make a study of basic metabolism in every case of bronchitis, or that every observation that can possibly be made upon any case should be made upon all.

There is, however, now current, especially in America, what may be called the encyclopaedic theory. Not the formation of judgement but its suspense is the function held most high. British teachers are criticized for training with a view to diagnosis instead of insisting on observation alone. Diagnosis itself is made a secondary thing, an object possibly of distant hope, like a future life, but not a thing to guide our action in the present. The first thing necessary is to make such a complete and detailed study of the patient's state that no cell remains unturned. That the world shall not contain the books (of notes) that shall be written is perhaps of little moment in a country that measures 1,500 by 3,000 miles; that before an exhaustive study such as this is finished both teacher and student may have sunk into the grave is not an obstacle in a population of a hundred millions, nor where it rains dollars need the cost be prohibitive. But it seems doubtful if in some cases the patient's untimely death may not render nugatory the incomplete though magnificent attempt.

Seriously, however, it is to be hoped that the British point of view may be maintained. On nothing has so much nonsense been talked as on the subject of education, and on nothing are sensible men more prone to push their views to an excess which is ridiculous. Just at present the immense increase of our powers of observation has naturally led men to exaggerate its scope. We have indeed seen instances in which new light has been shed by phenomena which are usually insignificant, but that is not to say that such occurrences are common. It still remains true that in the great majority of cases we know the limits within which laborious observation may be usefully employed. And while it is in thorough accord with our traditions to ply observation to its fullest limit, yet it is our habit to try to make up our minds.

It is often said that the British, or perhaps the English, are of a race that has no sympathy with principle and is interested in action alone; that they are efficient in difficulties but can give no reason why; that the Constitution works, but as a product of human reason is absurd; that we have tumbled into an empire which will perhaps continue by good luck but certainly not by good management. That is a complete misreading of the English character. The real feeling which shapes English thought—and thought is always and in all men moulded by feeling—is a sense of the immensity and the imminence of the Unknown. This is present to us most vividly throughout our lives. We desire a logical basis for action as much as other races, but we have a haunting feeling that we have never observed the whole. We take a provisional conclusion and act upon it—perhaps we are readier in making such quick judgements than some are—but we know that it is unsatisfactory and uncertain, and we doubt whether all conclusions are not much the same. We are apt to think logical rules of action unsafe, because they are deduced from principles whose basis, from the fallacy of insufficient instances, is probably unsound. Few general laws command respect with us, and truth seems very far away.

With this genius and cast of mind our critics may be sure that an undue reliance on precocious diagnosis is not likely. In medicine as in other matters it is our habit to treat conclusions as provisional. We do, indeed, desire some ground for action when action must be taken, for it is a maxim with us that the King's Government must be carried on. But we use it as a hypothesis only in default of a better, and we seek and welcome fresh facts with equal pleasure whether they prove it or disprove. Where no action is immediately necessary we enjoy the luxury of contemplation as much as others, but as in most cases something must be done, we make the best effort of which our rude minds are capable, and we call it common sense.

THE STATE OF THE PUBLIC HEALTH.

SIR GEORGE NEWMAN'S REPORT FOR 1922.

(*Concluded from p. 538.*)

LOCAL SANITATION.

AN account is given on established lines of work under the Ministry of Health relating to water supply, sewage disposal, rivers pollution, scavenging, and general environmental hygiene. Smoke abatement receives particular attention, and Dr. Niven's health report on Manchester is referred to. The Committee on Smoke and Noxious Vapours Abatement (1921) suggested the compulsory use of mechanical contrivances for avoidance of smoke, the establishment of combined "smoke authorities," and the appointment of expert smoke inspectors under the Ministry.

As to scavenging, attention has been given to defective methods of disposal of London refuse in the adjoining counties. A conference was held, and a joint consultative committee issued a statement as to precautions which should be taken concerning refuse tips—shallow layers of refuse promptly covered with earth—the prevention of fire, and the covering of railway trucks and barges during transit of refuse. Methods of disposal by salvage and pulverization plants are being kept under observation.

It is pointed out that offensive trades should be controlled even if effluvia or emanations cannot be proved injurious to health.

Isolation Hospitals.

Isolation and small-pox hospitals have been the subject of inquiries and inspections. Several so-called small-pox hospitals are such merely in name.

"Old cottages, temporary structures, without proper accommodation for the nursing staff, insufficiently ventilated, deficient in water supply, lacking facilities for bathing and washing, with inadequate drainage and means of sewage disposal, are considered by certain sanitary authorities, in the absence of small-pox, sufficient provision for the reception of patients suffering from small-pox. When small-pox occurs in these districts, the hospital accommodation, such as it is, is inadequate to receive even the first few patients and gross overcrowding results.

"In a recent visit to one of these hospitals, a medical officer of the Ministry found three patients suffering from small-pox in a so-called ward measuring 12 ft. by 9 ft. by 7 ft., the cubic space per person being less than that usually provided in a common lodging-house, and the floor space being one-quarter of that recommended as necessary by the Ministry."

"The Ministry has no legal authority to compel a sanitary authority to provide an isolation or a small-pox hospital nor to regulate the use of such hospitals when provided."

VENEREAL DISEASE.

Good work continues to be done under the venereal disease scheme, notwithstanding that need for economy has led to the closure of a few smaller centres. Beds for in-patients are available in connexion with most of the centres. Sixteen hostels have accommodation for 271 women and girls, and treated 584 cases, their work being valuable in preventing ophthalmia neonatorum and infantile syphilis. In 1922 effort under the scheme was directed mainly to improving efficiency by increased thoroughness in treatment, by adding to the facilities for the treatment of gonorrhoea, by more convenient arrangements for patients, and by improving equipment where required. Sufferers from syphilis are more readily convinced of the value of due attention than are those with gonorrhoea. The report states that "Unfortunately in a number of centres the treatment of gonorrhoea still falls short of the best modern practice, and in these cases it is not surprising that the official clinics fail to attract anything like a due proportion of cases of gonorrhoea." In women efficient treatment of gonorrhoea is a most exacting task. Gonococcal vaccines are being found of undoubted service in appropriate cases, both of women and men. The importance of tracing contacts is insisted on, for a syphilitic child means a syphilitic mother, and the prospect of more syphilitic children.

The number of fresh infections of syphilis has certainly fallen, and the impression strengthens that gonorrhoea is also on the decline. The number of cases dealt with for the first time in 1922 was: syphilis 25,762, against 32,733 in 1921, and gonorrhoea 29,477, against 32,433. Cases other than venereal number 16,988. The total number of attendances was 1,560,568.

FOOD IN RELATION TO HEALTH.

Milk.

Control and grading of milk—"certified," "Grade A (tuberculin tested)," "Grade A" not so tested, and "Pasteurized milk"—are the main features of present-day supply. Of 2,400 animals which passed the tuberculin tests 1,500 were on "certified" farms and 900 on "Grade A" farms; the herds were daily producing 2,250 gallons of "certified" and 1,350 gallons of "Grade A" milk. Bacteriological sampling yields improving results; in 1920, 71.2 per cent. of samples were satisfactory; in 1921, 75.4; and in 1922, 81.7; the numbers on which these percentages were based rose from 60 in 1920 to 142 in 1921 and 338 in 1922. But the average consumption per head of milk in Great Britain is less than a third of the United States average, though the need of the children for milk is equally great in both. It is hoped that the improved keeping qualities of milk, and public knowledge of its better quality, will promote its use. The essentials are clean and healthy herds, clean milking, effective and immediate cooling, prompt bottling, and clean and rapid transit.

Meat Inspection.

The code of instructions for inspectors prepared by the Departmental Committee on Meat Inspection (1921) was issued by the Ministry after emendation. The report gives an account of action taken and under consideration for preventing importation of unsound meat from abroad—tuberculous pork, pig's heads with submaxillary lymphatics removed, and certified "inedible" grease from the United States manufactured abroad into "refined lard" for sale in this country.

Food and Drugs.

The administration of the Sale of Food and Drugs Acts is still under the influence of post-war economy. Of over 60,000 samples of milk, 8.6 per cent. were found adulterated; of over 11,000 samples of butter 2.4 per cent.; of 3,700 margarine 0.7 per cent.; of 1,878 cream and preserved cream 23.7 per cent.; of vinegar 6.2 per cent.; coffee 1.5 per cent.; spirits 14.6 per cent.; drugs 6.7 per cent.; and other articles 3.6 per cent. The number of drug samples was 5,863, and the total samples, including all the above, 113,800. The electrolytic method of estimating arsenic has been improved greatly, and is of value for finding the metal in food, the source usually being arsenical sulphuric acid, or ingredients dried in contact with fumes from arsenical fuel.

Shellfish.

Various investigations of shellfish were made during the year, but the report protests against the insufficiency of the information often sent where enteric fever is attributed to consumption of shellfish. The "Weymouth (Shellfish) Regulations, 1922" have been applied to forbid the relaying in Portland Harbour of oysters for human food, the harbour being polluted by crude sewage.

Food Poisoning.

An account is given of various inquiries into chemical poisoning, where lead, copper, or zinc, or, in one case, potassium nitrite, was concerned. Bacterial poisoning occurred on a considerable number of occasions, the articles of food brought under suspicion being very numerous, including meat, fish, and fruits. In many cases an organism of the Salmonella group was isolated. An outbreak of dysentery at Lynton was traced, through milk supply, to a farm hand who had served in the East and was found to be an active carrier.

INSURANCE MEDICAL SERVICE.

With most of the facts mentioned in this section of the report readers are already acquainted, and the least familiar matter, the rheumatism inquiry, is referred to elsewhere in this notice, but we may quote the following paragraphs:

"The number of insured persons entitled to medical benefit in 1922 was (approximately) in England 12,690,000, and in Wales

000; total 13,500,000. The approximate number of insured persons on the lists of insurance practitioners was in England 11,900,000, and in Wales 733,600; total 12,633,600. In addition, there were 159,000 insured persons on the lists of approved institutions (England 130,000, Wales 29,000), and 41,800 insured persons (England 30,000, Wales 11,800) made their own arrangements for medical treatment.

"The number of insurance practitioners in 1922 was in England 11,750, and in Wales 838, a total of 12,588. Fifty per cent. of the doctors have under 900 persons on their panel, and 85 per cent. under 2,000. The average is 1,000."

The report contains a reference to disciplinary cases, and Sir George Newman takes the opportunity of pointing out that the complaints occurred in the course of the treatment of at least six million insured persons and of forty-four million attendances.

Sickness and Invalidity.

In 1922, the total loss of work, as represented by payments under the Acts, amounted to 19½ million weeks, or 375,000 years. In addition, there was all the sickness which did not involve loss of work, and all the labour and expense in the care of the sick. In 1,000 cases of incapacity, the chief causes were bronchitis, catarrh, colds, etc. 213, digestive diseases 131, lumbago, rheumatism, etc. 88, influenza 85, injuries and accidents 79, abscesses, boils, and other septic conditions 69, debility, neuralgia, and headache 55, nervous and special sense diseases 49, skin diseases 48, anaemia 32, genito-urinary diseases 25, pneumonia and other respiratory diseases 15, organic heart disease 14, tuberculosis 14, and malignant disease 2; leaving a balance of about 81 due to other causes.

Poor Law Medical Service.

Certain proposals to transfer infants and young children from an institution to more pleasant surroundings in the country have been approved. The system of appointing medical consultants at Poor Law infirmaries is being extended, and in London only three or four infirmaries are now without them. These institutions are approximating more and more to the standard of general hospitals, and they are being used more and more for medical education.

General Epidemiology.

The statistics of notifiable infectious diseases presented no unusual features, except that a considerable decline occurred in the group having a peculiar affinity with the nervous system—encephalitis lethargica and the rest.

Small-pox.

The story of small-pox in England in 1922 and subsequently has been told in the medical press throughout the year in connexion with prevalence of the disease in different districts, and Sir William Hamer has given an account of the disease in London. It is convenient now to have it set forth for the whole of England and Wales, but it has been dealt with so fully in this JOURNAL that it need not be again gone over. As usual the facts clearly and convincingly teach to all who are capable of learning and are willing to learn the preventability and controlability of the infection by due resort to the prophylactic whose virtue Jenner published to the world at the end of the eighteenth century. Vaccination has stood the test of more than 120 years' world-wide experience, and the truth is retaught by every outbreak. Sir George Newman, in his summing of "the present situation," restates briefly and forcibly essential truths to which there is no reply.

Measles.

Measles, it is pointed out, remains one of our formidable enemies, but the average number of annual deaths during the past three years (5,042) was considerably less than the average (7,318) for the preceding four years, in which the disease was compulsorily notifiable throughout the whole country. The problems relating to measles are discussed in considerable detail in the report, with reference in particular to the practicability of postponement of epidemics, and the segregation, discovery, and control of contacts. When the disease has already spread, attention should be devoted to prevention of mortality and of complications or sequelae. The report gives a full account of the practical measures that can be adopted, comprising instructions to parents, medical assistance, health visiting, nursing, institutional and convalescent home treatment, after-care, outbreaks in institutions, Government grants for measles work in connexion with child welfare, and compulsory notification where locally considered desirable. Measles unfortunately resembles pre-vaccination small-pox in the fact that no protective comparable to vaccination is yet available.

Scarlet Fever.

Scarlet fever is being carefully studied by the Ministry in respect of the whole subject of its control, looking to mildness of type in modern times, to the high cost of lengthened institutional segregation and of disinfection, and to the practicability of safe home treatment as at present being carried out in the Tottenham Urban District. The result of the investigation will be awaited with interest.

Diphtheria.

The inquiries referred to in last year's report are being continued. The observations then recorded are confirmed to the effect that free swabbing should be resorted to in diagnosing a first outbreak of sore throat in an institution or school, but that promiscuous swabbing subsequent to prevalence becoming certain is of little use, and notifications depending solely on extensive swabbings have little justification. An official memorandum issued in July, 1922, dealt with the supply and administration of diphtheria antitoxin, the use of the Schick test, and methods of active immunization. The International Serological Conference has made the useful proposal that a standard antitoxin should be maintained at the State Serum Institute at Copenhagen, to which manufacturers can send specimens for comparison.

Under the guidance of Dr. Copeman much use has been made of the Schick test as a means of estimating individual susceptibility to diphtheria as in the West Norwood schools of the Lambeth Guardians, and in the case of nurses and others in close attendance on diphtheria. The results seem to indicate lower percentages of susceptibility among classes where some degree of immunity may have been acquired through unrecognized exposure to infection. As regards toxin-antitoxin immunization, Dr. Copeman has concluded that to avoid risk of severe reaction, especially in adults and individuals liable to "serum rash," an exceptionally small dose should be given at first, to be followed by an ordinary dose if there is no unusual reaction within twenty-four hours of the small dose.

Influenza.

The recrudescence of influenza in the latter part of 1921 reached a maximum by the end of January, 1922, and then declined. It was accompanied by increased notification of pneumonia. In Sheffield there was a genuine epidemic of both diseases, and as that city has excellent accommodation for pneumonia, every effort was made, with the able assistance of the local Division of the British Medical Association, to secure complete notification, so that when the Ministry's representative visited in July not a single death from pneumonia had occurred without previous notification. Leeds and Bradford were also considerably affected. The total number of deaths from influenza in England and Wales in 1922 was 21,498.

Epidemic Nervous Diseases.

Poliomyelitis, polioencephalitis, cerebro-spinal fever, and encephalitis lethargica are considered together as in previous years. From each of the four the deaths were fewer than in 1921, notably so in the case of encephalitis lethargica, for which the figure is 454 against 1,470, whilst from all four the total deaths have declined from 2,420 to 1,184.

Of encephalitis lethargica, however, it is remarked that "in addition to a high fatality, this disease leaves many patients grievously incapacitated by various neuropathic and psychopathic conditions," and that its late effects will need close attention in the future. Special inquiries are being continued, and an account is given of an investigation by Dr. Parsons and Dr. Fyfe, of the Warwickshire Health Department, of a grouping of cases in a small school in a Warwickshire village. In commenting on this outbreak, and the remoteness of the area in which it occurred, it is remarked that "as with acute poliomyelitis so now

with encephalitis lethargica it seems as if elucidation of the natural history of this disease may come chiefly from study of outbreaks in isolated rural districts," whilst it is said also that

"The source of infection is not apparent, but here again analogy with other case-groupings suggests previous contact with some more populous district on the part of one of the cases; in the Radway outbreak the first patient was the only child in the school who spent the holidays away—at Birmingham and Walsall."

Botulism.

Botulism has become of general interest since the Loch Maree outbreak, which was noticed in the BRITISH MEDICAL JOURNAL at the time. The disease has been recognized in Europe for over a century. In 1918 a number of the earlier cases of encephalitis lethargica were reported to the central authority as botulism, but without sufficient evidence. In the United States since 1913 nearly 400 cases have been reported. The bacteriology of the disease is expounded, and, after pointing out that this country at the present day depends largely on imported canned foods, Sir George Newman goes on to discuss the means which should be taken to protect the consumer against food poisoning. Very briefly stated, these means are good sanitation of manufacturing premises, materials of good quality, wholesome, sound, clean, and in good condition, preservative reagents periodically analysed to detect impurities, perfect cleanliness of vessels, utensils, implements, and machinery, and the sterilizing and suitability of containers; where sterilization by heat is employed in the preservation of hermetically sealed foods it must be applied effectively to the finished product; healthy, cleanly workers; and carefully organized storage and distribution. There ought to be for safety a practical partnership between the manufacturer, the central health authority, the local health authority, and the consumer. The public and the press should carefully avoid the creation of food "scares," whose effects may be much more serious than the outbreak of poisoning itself.

Tuberculosis Schemes.

In England there are 442 dispensaries with 349 tuberculosis officers. There are 19,386 beds in 441 residential institutions. Of these 201 are provided by local authorities, and 240 by voluntary bodies; 11,526 beds are provided in the former and 7,860 in the latter. In a series of thoughtful paragraphs much wise advice and guidance is given as to the working of tuberculosis schemes and sanatoriums, and we will quote only the last of these.

"It is desirable that authorities and the officers of dispensaries and sanatoria should not be misled or discouraged by ill-informed criticism or condemnation of the tuberculosis schemes as now administered in the country. Some sanatoria are less successful than others, and all sanatoria are unsuccessful with some cases—which is true of all human institutions. *The success of a sanatorium depends upon its management.* There can be no question or doubt whatever that the principles of sanatorium treatment are sound and of enduring value. It is their practice that demands our continual and vigilant attention."

Treatment and Diagnosis.

Artificial pneumothorax, *x* rays, diathermy, the Spahlinger treatment, and Professor Dreyer's method are referred to. The Ministry is willing to investigate experimentally the Spahlinger treatment if only it can obtain the material, but the preparation of "complete serum" seems long and complicated, and no definite date has been assigned by M. Spahlinger for its production in large quantity for general use. Professor Dreyer's method promises well. A full account of it has already been given in the BRITISH MEDICAL JOURNAL (June 23rd, 1923, p. 1065).

Port Sanitary Control.

As befits its national importance, this subject occupies considerable space in the report. Fundamental requirements include an efficient port sanitary system; adequate facilities for isolation of ship-borne cases of infectious disease, and means for disinfection; arrangements for disease control on board ship, for inspection and general sanitation, and for inspection of imported foodstuffs; inspection of aliens; and adequate regulations for control of infection and the protection of food supply. Besides the Regulations of 1907 relating to cholera, yellow fever, and plague, regulations were issued in 1920 for other infectious diseases, and half the cost of administration is borne by the Exchequer. Medical examination of aliens is now placed under the Ministry of Health. At each port the work is directed by the medcal officer of health. A table shows that at 13 ports of England and Wales nearly 340,000 aliens arrived in 1922, of whom nearly 200,000 were temporary visitors, about 70,000 intended to settle permanently, and the rest were on their way to other countries.

Fumigation of vessels for destruction of rats is discussed, in respect both of sulphur dioxide and hydrocyanic acid, the latter being much the better in various respects, notwithstanding its obvious risks, which can be guarded against if instructions are followed. The United States requirements for half-yearly destruction of rats on ships have been modified, as a result of a visit to the States by Dr. Reece and Dr. Stock, in respect of properly constructed passenger vessels plying regularly between ports not infected with plague, and loaded under specified precautions for exclusion of rats.

The hygiene of merchant ships has, it is stated, undergone steady improvement in recent years.

INFECTIOUS DISEASES INTRODUCED FROM ABROAD.

Malaria.

The report states:

"During the four years since the 1st March, 1919, when the Ministry's Public Health (Malaria, etc.) Regulations came into force, more than 23,000 cases of exotic origin, with 794 deaths, were notified in England, and during the six years since 1917 nearly 500 cases of new indigenous infection were the subject of special inquiry and action. After 1920 there was a marked decrease in the number of notifications of cases of exotic origin and a coincident decrease in the number of cases originating locally in this country. In 1922 the exotic cases notified numbered 1,356 as compared with 1,644 in the previous year, and the new indigenous cases numbered only 6 as compared with 12 in 1921 and 36 in 1920. The number of deaths attributed to malaria in 1922, all of them being among persons who contracted the disease abroad, was 133 as compared with 143 and 250 in each of the two preceding years. In pre-war years the average number of deaths attributed to malaria was between 50 and 60 per annum."

At endemic centres in Kent and near Shrewsbury a few cases have occurred. Field and laboratory studies of mosquitos, and of the value of various "larvacides," are being carried on, and sanitary engineering works of preventive character are under negotiation in one area. Inquiries were made in every one of 336 cases in which malaria was mentioned in death certificates, with the result that in a large proportion there was no evidence that this disease had had any relation to the death. Cases have occurred in England among crews and passengers in vessels trading with the East. The disease assumed the character of an epidemic of great severity in Greece, and in Russia from the Black Sea to Archangel.

Plague.

Though no case of human plague occurred in England and Wales in 1922, the position throughout the world is ominous. The disease is now epidemic in 240 centres, as against only 60 in 1904, and these centres include a number of localities in Europe. In India the plague season of 1922 was again one of the mildest on record, but there was a marked increase in the early weeks of 1923 shown. The report states:

"It is not unjustly held that the present world distribution of plague indicates that in great degree the measures hitherto adopted to prevent its maritime spread have failed. It is thought that the relative failure may be due to a lack of appreciation of observations indicating that in ship-borne bubonic plague the part played by rats and rat-fleas is almost all-important, the part played by human cases being almost of negligible importance. Of interest in this connexion are the instances in which ships have conveyed plague to other countries without any human cases having arisen on board, and the instances in which an incomplete fumigation has failed to render a ship 'clean.' Having regard to observations of this kind, the present tendency is to strengthen measures against rats and fleas and to relax measures against human cases of the bubonic type."

Cholera.

The position is generally favourable throughout the world; though there was again epidemic prevalence of cholera in Russia during the summer of 1922 there was, as before, rapid decline in autumn and winter. No cases occurred in England and Wales.

Small-pox.

Small-pox as an infection introduced from abroad is reported on thus:

"A noteworthy feature of the small-pox statistics received from abroad is the evidence which they provide of the respective incidence of the mild type and of the severe type of the disease. The statistics available indicate that in 1922 the mild non-fatal type was the rule in Finland, Germany, Switzerland, Egypt, Cuba, Jamaica, South Africa and parts of Canada and the United States, while the severe type prevailed in most tropical countries and in Russia, Poland, Japan and parts of Central and South America. In a few countries (notably Ontario) the mild type which prevailed during the early months of the year was followed, after an interval, by an epidemic of the severe type, and in one or two (as in Portugal and England) where both types appeared during the year, it was found that the two seemed to run concurrently, some localities experiencing only the mild type, others only the severe type."

Dysentery.

Among the 729 cases in England in 1922 were included a large proportion of instances of relapsing amoebic dysentery among ex-service men. In Wales there was an outbreak of 1,100 cases of bacillary dysentery, with low mortality. It was conveyed at first by contaminated water, and the infection may have been derived from demobilized soldiers.

Trench Fever.

Only 6 cases of trench fever were reported—all ex-service men.

Yellow Fever.

The position as to yellow fever seems favourable, though it persists in various localities in South and Central America, including Mexico.

Typhus.

The prevalence of typhus fever in Russia seems to have doubled in the first five months of 1922. It is, however, a louse-carried disease against which organized sanitary administration is effective if the simultaneous arrival of large numbers of infected persons can be avoided. From this point of view the preventive work carried on in the border States of Russia with the aid of the League of Nations is of great importance. The need for the control of destitute immigrants from infected areas is exemplified in the emigration of Greeks from Anatolia and Eastern Thrace.

MEDICAL INTELLIGENCE.

The Intelligence Division of the Ministry is organized in two sections, lay and medical. Information is collected from home and foreign sources and distributed. Recent information published in books and journals is noted. Prompt and regular news of the incidence of dangerous epidemic diseases at ports and elsewhere abroad is collected, and a weekly bulletin issued to health officers and others specially concerned. In 1922 information was received from 170 consuls or other official representatives abroad, and 5,248 telegrams or dispatches were received, besides many printed statistical returns. Office committees were formed to investigate questions relating to scarlet fever, cocaine substitutes, chlorosis, small-pox diagnosis, cancer, rheumatism, and grant-aided public health expenditure.

International health work is notably developing, bringing the Ministry's medical officers into touch with their colleagues in foreign countries, the British Dominions and Colonies, India, and Egypt. The maintenance of a health organization will, in future, form part of the permanent functions of the League of Nations. The work done can be studied in the publications of the Office International d'Hygiène Publique. Progress has been made with the international agreement for treatment of venereal disease in merchant seamen, and additional countries are falling in with the scheme. Contributions from the Rockefeller Foundation have helped further development in intelligence work and health statistics, and have also helped to make possible such an educational visit as was paid to this country last year by about thirty medical officers from different foreign countries.

INVESTIGATION AND RESEARCH.

Work at the Ministry's laboratories related to pneumococcus and investigations into the serological characters of different strains of diphtheria bacilli. Routine work included preparation of antirabic vaccine, examination of food materials for *B. botulinus*, examination of shaving brushes, etc., for anthrax, examination of specimens from cases of suspected infectious disease, of Grade A milk, and of food samples. The Auxiliary Scientific Investigation Fund was spent on special work relating to public health, as on Wassermann tests in the newborn, study of the Schick test, and of mosquito life. Liaison with the Medical Research Council was maintained, partly by membership of special committees. Statistical investigations of various sorts were conducted, and many questions of interpretation of data, etc., dealt with. Epidemiological inquiries have already been mentioned.

Rheumatism.

The Interdepartmental Committee on Rheumatism, of which Sir George Buchanan is chairman, began by making an estimate of the respective incidence of the various forms of "rheumatic" diseases in relation to age, sex, occupation, and environment. A large team of insurance practitioners entered with zest into the scheme. "Fifty practitioners fulfilled for the whole year the arduous task of recording, on a uniform plan, every case of rheumatic disease occurring in an insured person in their practices," and a population of 90,000 insured persons has been in this way kept under review. This is the first group inquiry on these lines, and a great advantage is that the population at risk, represented by this sample, is fairly accurately known. The regional medical officers have made inquiry on the same plan as regards 5,000 cases referred to them. The rheumatic diseases were classified under nine headings, and these were placed in three groups—(1) acute, (2) non-articular, and (3) chronic joint change.

Goitre.

The causation and prevention of goitre, as it occurs in widely separated districts of England, have been studied. The simultaneous occurrence of enlarged thyroid in a number of children at cottage homes was carefully investigated by Dr. Adams. Other subjects of investigation were an outbreak of "pink-eye" amongst scholars at a college, the dermatitis of bakers—so-called "baker's itch"—and alleged tetrachlorethane poisoning in toilet saloons.

KITCHENER MEMORIAL MEDICAL SCHOOL AT KHARTUM.

BY

O. F. H. ATKEY, M.B., B.S.LOND., F.R.C.S.ENG.,

DIRECTOR, MEDICAL DEPARTMENT, SUDAN.

THE object of the Kitchener Memorial Medical School is to provide a sound medical training for young Sudan Arabs so as to meet the large demand for doctors which at present exists and which is likely to increase very greatly during the next few years as the schemes at present in hand for the economic development of the Sudan come into action and are gradually extended.

The need for this school was first urged by Lord Kitchener during his last visit to the Sudan; he looked on it as the most important step in the completion of the educational scheme which he initiated when he founded the Gordon Memorial College.

The foresight and imagination shown by Lord Kitchener in founding this college immediately after the battle of Omdurman at a time when over three-quarters of the population had died from famine and disease, and the land was deserted and uncultivated, has been more than justified by results. The recovery of the Sudan has been phenomenal and it could not have taken place without the agency of this institution.

The Sudanese, with the exception of the inhabitants of the extreme south, are an Arab race differing from the Egyptians in physical characteristics, in ideals, history, and origin; they are quick, intelligent, eager for education, and

intensely loyal to the British connexion. They are, moreover, extremely anxious to have young men of their own race trained as doctors and they have themselves subscribed over £11,000 to this project. In addition to this, one Sudan merchant has bequeathed all his property now in his lifetime to be held by trustees; the interest, a matter of £1,200 a year, is to be devoted to the maintenance of medical students during their period of study.

Scope of the Project.

The immediate intention is to train as assistant doctors young men selected from the final year students of the Gordon College.

The selection will be based on honesty of character, energy, and power of initiative, as well as on proficiency in their studies. They will have received a thoroughly sound secondary education including a good knowledge of English, which will be the sole medium of instruction. The number of entries each year will at first be limited to twelve. The period of instruction will be four years. During the first two years the instruction given will include the preliminary sciences and anatomy, histology, physiology, and materia medica. The last two years will be occupied with the purely professional subjects. Special emphasis will be laid on hygiene and tropical medicine.

Work in the out-patient department will commence from the first year. Students who have conscientiously carried out their course of studies and who have satisfied their teachers and their examiners that they have attained the required standard, will be awarded a diploma authorizing them to practise in the Sudan only.

The object aimed at will be to obtain thoroughly conscientious assistant doctors accurately trained up to a definite standard and absolutely reliable up to the limit of that standard, but who would not be expected or allowed to attempt the higher grade work of the highly trained physician or surgeon.

These assistant doctors will often be stationed in isolated posts, but they will be under the general direction and advice of British medical inspectors.

That the Sudan Arabs can be trained to be useful doctors has been shown by experiments carried out at Khartum Civil Hospital. A few selected youths have been trained at this hospital as assistant medical officers, and in spite of the impossibility of giving them a scientific medical training owing to the lack of laboratory accommodation and of the equipment necessary for a teaching school, and to the insufficient teaching staff available, a considerable proportion of these purely empirically trained assistant medical officers have proved themselves to be men of marked ability and have performed very valuable work in combating epidemics and in rendering simple surgical and medical assistance to the people among whom they have been working.

At a later date, when the pressing need for doctors has been met and a suitable teaching staff has been built up, it is proposed to extend the length of the curriculum to five years and to bring the standard of the curriculum and of the examinations up to the standard demanded by British medical schools; the preliminary sciences will by then be included in the curriculum of the Gordon College.

It is thus hoped in the not distant future to have a medical school at Khartum which will take a leading place in the civilizing and development of North-East Africa, and which, working in close liaison with the older schools of Europe and America, will produce really good scientific work.

Facilities for Teaching.

A medical school building is in course of construction, and will be completed by November next; it contains a lecture theatre and laboratories for the teaching of the preliminary sciences and of anatomy, physiology, and pathology. The site of this building is opposite to the Civil Hospital and only a few yards from it on the main road leading from the railway station to the Palace.

The clinical teaching, clerking, dressing, etc., will be carried on at the Khartum Civil Hospital, a well equipped modern hospital of a hundred beds with an *x*-ray installation and clinical laboratory. A new and well equipped out-patient department has just been added, so as to afford greater facilities for out-patient teaching.

Teaching Staff.

For the present the teaching will be carried out by the Government medical and scientific staff, including the director and staff of the Wellcome Tropical Research Laboratories, which are situated within ten minutes' walk of the medical school buildings. In addition to the Government staff a medical registrar will be appointed whose whole time will be spent on the medical school work.

It is recognized that this can only be a temporary arrangement for a few years, and that later it will be necessary to increase the whole-time teaching staff considerably.

Need for the School.

It has been pointed out that the object of the school is to build up a service of Sudanese doctors which will enable the diseases and epidemics of the Sudan to be dealt with more effectually both by medical and hygienic measures, and which will render it possible to establish the hygienic conditions necessary to enable the schemes of economic development at present in course of execution and their subsequent extensions to be carried out successfully.

At present there are immense areas throughout the Sudan, and especially in the southern regions, in which the population is completely out of reach of any hospital and cannot be visited by Government medical officers. In consequence the loss of life from untreated disease and unchecked epidemics is very great. In particular the following diseases call urgently for further medical and hygienic action:

(*a*) In the extreme south and south-west sleeping sickness is exacting a heavy toll from the population, and in the south-west, Bahr-el-Ghazal, this disease has increased greatly during the last few years. There is always the danger of it becoming acutely epidemic.

(*b*) On the Blue Nile kala-azar appears to be on the increase.

(*c*) In the southern Sudan also great numbers of the population are attacked by yaws and syphilis, and these diseases appear to be rapidly gaining ground.

(*d*) Bilharziasis, ankylostomiasis, and trachoma are widely spread in the northern and central Sudan, and it is essential to stamp out these diseases before they have got such a hold on the population as to render this practically impossible, as is the case in Egypt.

(*e*) The population of the central Sudan is annually prostrated with malaria, which is largely preventable.

As regards the economic development of the Sudan which has been referred to above, a dam is being built across the Blue Nile 170 miles south of Khartum, and 300,000 acres of the fertile Gezirah plain will be placed under perennial irrigation for cotton cultivation. The railway also is being pushed through to Kassala so as to link up this potentially rich country with Port Sudan, thus enabling large areas of the fertile Gash delta to be brought under cotton cultivation on a profitable basis. The cotton-growing areas of the Sudan can be extended almost indefinitely. In the Gezirah alone over a million acres of ideal cotton-growing land await development, and there are further enormous areas in Kassala Province and up the White Nile and Sobat rivers which will gradually be brought under cotton cultivation.

There is just sufficient man-power in the Sudan to meet the needs of this development, but none to spare. It is essential that there should be no wastage of man-power, and that there should be a steady increase of the population to meet the progressive development foreshadowed above. The whole success of this development, therefore, depends on adequate medical and hygienic arrangements being carried out, and this cannot be done without a largely increased supply of doctors.

In addition to these considerations it is confidently expected that an increase of doctors in the southern regions will greatly facilitate the administration of these partially pacified countries. The quickest and surest way to pacification and civilization in Central Africa is to increase enormously the number of doctors.

It is difficult to think of any other way in which such far-reaching results can be obtained for such a trifling expenditure, so much suffering relieved, so much work done towards enabling the great potential wealth of this country to be developed.

England and Wales.

POST-GRADUATE COURSES.

POST-GRADUATE lectures will be given by the honorary staff of the Manchester Royal Infirmary in medicine, surgery, and special subjects each week on Tuesdays from October 2nd till December 18th. The courses will be resumed on January 29th, 1924. Short courses explaining recent scientific work will also be given on Fridays from October 5th to December 7th. The first lecture, on October 2nd, will be by Dr. F. E. Tylecote, who will discuss some recent abdominal cases. On Friday, October 5th, Dr. Judson S. Bury will lecture on the regional diagnosis of paralysis. All the lectures will begin at 4.15 p.m. and will be free. Details can be obtained from the Secretary for the Post-Graduate Lectures, at the Infirmary.

The post-graduate courses of the Clinical School of the University of Liverpool will be resumed on Monday, October 1st. The hospitals included in the scheme are the Royal Infirmary, the Royal Southern Hospital, the Northern Hospital, the Stanley Hospital, the Royal Liverpool Children's Hospital, and the Hospital for Women in Shaw Street. The lectures and demonstrations will be largely clinical in character and will be given in the various hospitals in rotation, beginning with the Children's Hospital, where Dr. Fordyce will open the course with a lecture on glycosuria; at the Southern Hospital on the following day Mr. Douglas-Crawford will lecture on surgical lesions of the jaw; on Wednesday, at the Northern Hospital, Dr. Bligh will describe types of mental defects in children; on Thursday, at the Stanley Hospital, Dr. Gullan will speak on diseases of the endocrine organs; and on Friday Dr. Abram will give a demonstration on clinical medicine at the Royal Infirmary. Further particulars and a card diary for the term can be obtained from Mr. J. C. Matthews, M.C., Secretary of the Clinical School, 61, Rodney Street, Liverpool. No fees will be charged.

In London post-graduate courses in various specialties, arranged by the Fellowship of Medicine and Post-Graduate Medical Association, will be given during the month of October. A course on urology at St. Peter's Hospital for Stone will begin on Monday, October 1st. Demonstrations will be given in the out-patient department every afternoon, and in addition lecture-demonstrations by members of the staff at 2 p.m., four times a week. A course of eight lectures on the more important diseases of tropical countries will be given by Dr. Low and Dr. Manson-Bahr at the London School of Tropical Medicine, beginning on Tuesday, October 2nd. A course in laryngology, rhinology, and otology will be held at the Central London Throat, Nose, and Ear Hospital from October 8th to 26th; clinical lectures and demonstrations will be given by members of the staff each day from 9.30 to 5. A course on children's diseases will be given at the Victoria Hospital for Children from October 8th to November 3rd, and special clinical instruction in ophthalmology will be available at the Royal London Ophthalmic Hospital during the whole of the month. From October 15th to 27th short intensive courses in cardiology and proctology will be given at the National Hospital for Diseases of the Heart and St. Mark's Hospital respectively. A short course in dermatology will also be held at the Hospital for Diseases of the Skin, Blackfriars, from October 29th to November 10th, and a fortnight's "refresher" course in general medicine and surgery from November 5th to 17th. Copies of the syllabus and full particulars as to fees can be obtained from the Secretary to the Fellowship of Medicine at 1, Wimpole Street, W.1, and, as in some cases the numbers are limited, early application should be made.

THE BRITISH ASSOCIATION IN LIVERPOOL.

On Sunday, September 16th, in the Lady Chapel of the Cathedral, the Rev. E. W. Barnes, Canon Residentiary of Westminster, preached to a full congregation, and afterwards the Bishop of Liverpool gave briefly, in the almost completed choir of the cathedral, the story of its foundation and progress. Sir Oliver Lodge spoke from the pulpit of Sefton Park Presbyterian Church on Man's Ascent and Free Will, and Dr. Adami, Vice-Chancellor of Liverpool University, delivered an address in Mossley Hill Church on the Limitations of Human Knowledge. In many of the places of worship the work of the British Association formed the subject of sermons.

A series of papers on sex and its phenomena were read in the Section of Zoology on September 18th. Dr. Crew gave an interesting account of investigations bearing on the transformation of domestic hens into cocks. In one case a hen 3½ years old ceased to lay, assumed the external characteristics of a cock, and sought battle with other cocks. Subsequently she mated with a hen which had previously laid infertile eggs. The result of this union were two chicks which in turn gave rise to another generation of typical chicks. *Post-mortem* examination of the hen-cock revealed abdominal tuberculosis. This disease had performed the operation of ovariotomy as if it had been done surgically. In other instances in which hens developed male characters ovarian disease was discovered. Dr. A. S. Parkes emphasized the fallacy of considering sex determination in mammals on the basis of the proportions of the sexes at birth. In man the sex ratio of pre-natal deaths was 150 males to 100 females. Dr. Dixon pointed out that the ratio of deaths was greater in males than in females up to the end of the fifth year.

Dr. J. S. Macdonald, F.R.S., professor of physiology in the University, made several contributions on the effect of cycling and walking on the human body. His conclusions were that the temperature steadily fell, no matter whether a person were cycling at a constantly maintained speed with no brake, or with a slight or heavy brake. To explain this he suggested that the ordinary processes of the body were in a state of suspension and the attention concentrated wholly on the exercise.

Professor J. J. R. Macleod, F.R.S., of Toronto, gave a popular lecture on insulin before a crowded audience in the Picton Lecture Hall. He related the history of the discovery of insulin, and warned his hearers that much more had to be learnt about its nature and that there was no synthetic substitute known as yet that would be of value to a diabetic patient.

An evening entertainment, given on September 18th in the buildings of the University, was attended by nearly 3,500 persons. Various was the entertainment offered to the guests, and the University deserves to be congratulated on the success of the occasion. Many short lectures were given by experts; that on model aircraft and their use in aeronautical research by Mr. R. V. Southwell, M.A., Superintendent, Aerodynamics Department, National Physical Laboratory, was especially attractive, not only on account of the lucid exposition it contained, but also for excellent experiments shown.

On September 18th the National Temperance League gave a luncheon, which was attended by the President of the Association, Sir Ernest Rutherford, Sir Richard Gregory (editor of *Nature*), Dr. Chavasse (Bishop of Liverpool), and Bishop Welldon. Mr. Bickerton presided, and after the luncheon Dr. John Hay delivered an excellent address on the scientific value of alcohol and embodied in his remarks the results of recent research. He mentioned the great national experiment of prohibition that was being carried out in the United States, and urged the importance of weighing the evidence in order to reach sound conclusions. Sir E. Rutherford agreed that prohibition in America should be regarded as a great social experiment, and its results subjected to the same searching tests as any other scientific statement.

The concluding general meeting was held in St. George's Hall on September 19th. Sir E. Rutherford proposed from the chair a resolution expressing the warmest thanks and appreciation of the Association for the generosity and hospitality the city of Liverpool had shown to the Association. The Lord Mayor, in accepting the resolution on behalf of the city, said that this, the 91st meeting, was the third largest in the history of the Association. The total membership of 3,296 was only about 500 short of the home record held by Manchester.

Ireland.

MEETING OF IRISH NURSES.

THE annual report of the Irish Nurses' and Midwives' Union, which was read at the opening meeting of the Council in the Mansion House, Dublin, when Miss Louie Bennett, President, was in the chair, recorded a total membership of 795, an increase of 128 since October last. The report alleged that the Government had acted dishonestly towards some district midwives in places where new appointments at an increased salary had been actually sanctioned by the late Dail Local Government Department when Mr. Cosgrave was Minister. A midwife in Dunshaughlin, appointed at £80 and the amount sanctioned, was reduced to £40, with £15 bonus, former sanction being withdrawn. When a question was asked in the Dail about this the excuse given was that sanction was issued "in error." The nurse had to suffer for the Department's "error." A similar thing occurred to a midwife in Edenderry, appointed at £67. The salaries of the Rathdown midwives were reduced also, as sanction had not been obtained during the troubles and dislocation of local government in 1921. This has happened lately also in Celbridge Union, where a bonus of £35 was cut off at once as sanction had not been obtained. The Rathdown guardians subsequently decided to pay the increased salary, and the Meath County Health Board has recently told the Local Government Department that it could not procure a midwife for a vacant district at the sanctioned salary, and the Union expressed the hope that the Local Government Department would be forced to raise its maximum soon and allow the local authorities to pay what they considered right. A scheme to provide daily visiting nurses for patients who do not require a whole-time nurse was launched by some members of the Union, principally Mrs. MacCarthy and Miss Bonass, in the early part of the year. The idea, the report stated, was new to Dublin and Dublin doctors, but when it was better known it would be a great success. The report was adopted. The following resolution was proposed by Miss Smithson and seconded by Miss Guinnane:

> That we are of opinion that a Ministry of Health should be immediately set up in the new Government, as it is plain that the progress of public health reform is at present being held up owing to the lack of a special department to deal with it; and we recommend that members of the medical and nursing professions should be appointed on the Health Ministry.

Dr. Rowlette, speaking in support of the motion, declared that there could not be prosperity in any country without good health. Personally he had no definite ideas as to the best means of impressing upon the Government the importance of a Ministry of Health. He understood that the Irish Medical Committee had already sent a deputation to Mr. Blythe; it would, he thought, be more efficacious for all to organize together. The Nurses' Union was specially strong on this question, because its members had special knowledge of what people needed, and were in touch with labour and those outside. The Labour party was the only one which made health a point in its programme. If it was made only a matter of improving the salaries of nurses and doctors the Union would not succeed.

Correspondence.

HEALTH RESEARCH IN SCOTLAND.

SIR,—The article in the current number of the BRITISH MEDICAL JOURNAL upon the health of Scotland, reviewing the valuable report of Dr. Chalmers, Medical Officer of Health, Glasgow, concludes with the statement that "there is abundant occasion and opportunity for valuable research into the health problems of Scotland. In these days there is too great a tendency to assume that research can only be conducted in a laboratory, but there is ample opportunity for field work of the best sort. The harvest is ready, and we hope the reapers also may be found."

The facts have, perhaps, been overlooked that the Medical Research Council, as is indicated in its Annual Reports, has during the past five years been fostering such investigations upon the problems of child life, and among these upon the influence of environment and the condition of parents on the growth and nutrition of children in the three largest Scottish towns—Glasgow, Edinburgh, and Dundee—and that the Carnegie United Kingdom Trust has given substantial financial assistance, in order to expedite the work and to allow of its extension to rural districts.

Previous studies have shown that the children of the poorer classes in industrial towns compare unfavourably with those of the better classes in the same towns and with children in rural districts. The object of the present investigation is to attempt to determine what factor or factors play the most important part in bringing about this condition.

The work is being carried out on two lines—first, extensive studies, through the child welfare centres, and second, intensive studies by visiting families representative of the class. These visits are made by trained workers who carefully record the condition, weight, and height of the children, the condition of the parents, and the size and condition of the homes. It is in the pre-school period, below 6, that the home conditions may be expected to have the most marked influence, and it is upon this period that work has been chiefly concentrated. Already records of some 10,000 children at child welfare centres and some 7,000 in their own homes have been accumulated and the work of carding the results is in progress, in preparation for their statistical analysis. This will necessarily take many months, but when completed the results cannot fail to throw some light upon the problems involved.

It is to be regretted that it has not been possible to extend these investigations to England, for, as pointed out in your article, a comparison between the conditions in the two countries would help to explain the differences revealed in Dr. Chalmers's report.

A study of the housing conditions and diets and of the physical condition of the children in coal miners' families chiefly in England made during the past year for the Committee of the Medical Research Council on Human Nutrition may throw some light upon the question.

Work in rural districts in Scotland is now in progress, not only on the mainland, but in the Lewis, a typical insular district. These will have to be continued for several months before sufficient data can be collected, the scattered character of the population naturally making the work slow and laborious.—I am, etc.,

University of Glasgow, Sept. 22nd. D. NOËL PATON.

ARTIFICIAL LIGHT TREATMENT OF TUBERCULOSIS.

SIR,—Dr. Axel Reyn, in his interesting paper on Finsen light treatment (September 22nd, p. 499), expresses his regret that a satisfactory explanation of its mode of action is not forthcoming.

I have never used the method, but from what I know of it I assume that it has this much in common with all other physical agents used in the treatment of chronic infections—namely, that in moderate doses it acts as an irritant producing inflammation, and is capable, if pushed beyond moderate limits, of acting destructively on the tissues. Further, that the readiness with which either effect is brought about depends on the vitality of the tissue, and whether diseased or healthy.

This raises the question of the difference between acute and chronic infections. An infection is acute when the causal organism possesses the faculty of exciting active resentment in the tissues. It may be that this effect is due to some highly poisonous product of its metabolism. Let us assume that it is—we are not so much concerned with the mechanism as with the fact. The result, at any rate, is a determination of blood to the point of the invasion, and the starting of those processes so well known under the head of inflammation. The fight thus instituted is in a short space of time fought to a finish between the leucocytes and the invaders.

In chronic infections, on the other hand, the fight is only half-hearted. The invading microbe has a different metabolic product, or whatever it is. It irritates less, and in

consequence there is less necessity for mobilizing the forces of defence. So much is this the case that it often looks as if a tacit agreement were arranged between the invaders and the defenders, whereby the stranger is tolerated on condition that he does not make his presence too much felt.

Now, if in such a case a local stimulant or irritant can be applied and its action controlled so as to produce active inflammation, the conditions obtaining in acute infections are simulated, the forces of defences are mobilized in earnest, and the process brought to a similar end.

This rôle of *agent provocateur* I take to be the common part played by Finsen light, radium, *x* rays, the high temperature of the cautery and diathermy, and innumerable chemical agents of which acid nitrate of mercury may be taken as a sample. In a particular case one agent may be more suitable than another, but the selection will be made on grounds of convenience rather than of principle.

It seems to me improbable that the agent kills the bacteria directly, and for two reasons: a lethal dose for bacteria would kill the tissues, and the area cured is often greater than the area treated.—I am, etc.,

Dublin, Sept. 25th. ROBERT WOODS.

THE TREATMENT OF TUBERCULOSIS BY THE SPAHLINGER METHOD.

SIR,—I read with great interest the article by Dr. L. Williams concerning the treatment of tuberculosis by the Spahlinger method (p. 519). I think it a pity that no analysis or comments were made on the cases, for as they stand one cannot judge the value of this treatment. For instance, are these the only cases treated by the Spahlinger serums and vaccines, or are they cases sent by Dr. Williams for this particular treatment? Obviously by picking out only successful results any method of treatment can be deemed effective. I hope Dr. Williams will not think I wish to disparage or underrate this method of treatment, but being keenly interested in this subject I could not allow the opportunity to slip by without making a comment.—I am, etc.,

Whipps Cross, E., Sept. 24th. GEORGE W. CHEATER, M.B., M.R.C.S., D.P.H.

COLOSTOMY AFTER TRANSPLANTATION OF URETERS.

SIR,—Sir Thomas Myles's letter on "Colostomy after transplantation of ureters" (September 15th, p. 486) reminds me of a little preliminary work I did on the subject six or seven years ago.

For some time previous to that I had observed what poor ultimate results had followed partial resections of the bladder for malignant disease, and it occurred to me that if complete removal of the bladder were always carried out the results should improve. This implied the creation of another bladder. The procedure I adopted was as follows:

I opened the peritoneal cavity and isolated the last six inches of ileum with caecum from the rest of the intestinal tract, brought the appendix to the skin, and reconstituted the lumen of the gut. In cases where no appendix is present the caecum could be opened, the opening inverted, and its base stitched to the skin, thus forming an ink-bottle valve. The patient was put back to bed and for the next three weeks the isolated caecum with terminal loop of ileum were washed out with 1 in 2,000 flavine. At intervals a scraping of the caecal mucosa was taken and cultures grown. In three weeks the contents were so nearly sterile that I thought it improbable the kidneys would be infected by implantation of the ureters.

During these three weeks I had learned that we had a cavity which held nearly two pints of fluid without the patient feeling uncomfortable. The fluid did not leak from the open end of the appendix even when the patient coughed or sneezed, and was easily drawn off by passing a rubber catheter down the appendix into the caecum.

Unfortunately the patient's general condition had rapidly deteriorated, due to bleeding from his growth, constant pain and incontinence, and I was forced to implant the ureters (the left into the loop of ileum communicating with the caecum and the right into the caecum) and remove the bladder at one sitting. I had intended to implant the ureters as a second stage, and as a third stage remove the bladder without opening it. The patient died of shock.

I mentioned the operation to Sir Arthur Keith, and he expressed doubt as to the kidney parenchyma tolerating for any length of time the transplantation of the ureters into a lining membrane so different in character from their own.

I determined to try the operation in dogs, repeating as nearly as possible the original procedure. As the dog has no appendix and its caecum is different to work with, I isolated a piece of small gut about six inches in length, closed one end and stitched the open end to the abdominal skin. Into this piece of gut I implanted one ureter, leaving the other untouched as a control. The dog made a good recovery and for weeks ran about the garden happy, and passing urine equally from the end of small gut and by the urethra. Then gradually the urine passing by the small gut diminished in quantity and finally ceased (about two and a half months after operation). The dog was chloroformed, killed, and the whole urinary tract removed and carefully examined. The kidney on the untouched side was normal macroscopically and microscopically, but the other kidney when examined microscopically proved to be but a mass of fibrous tissue with here and there an isolated little clump of secreting cells—this in spite of the fact that there was no mechanical obstruction to the outflow of urine, and no evidence of gross infection.

So far, therefore, Sir Arthur Keith's observation has proved to be sound, but obviously much more work requires to be done on the subject before a definite conclusion can be come to.

If the kidneys will tolerate the implantation I consider the caecum with terminal loop of ileum and appendix acting as urethra much the best substitute for the normal bladder, as it could be kept sterile and could be emptied every four or six hours by passing a rubber catheter down the appendix.

Unfortunately circumstances made it impossible for me to pursue this line of investigation further.—I am, etc.,

St. Leonards-on-Sea, Sept. 19th. DAVID LIGAT.

ADMINISTRATION OF ORGANIC EXTRACTS BY THE NOSE.

SIR,—The oral administration of the glands of internal secretion, with the exception of the thyroid and parathyroid, I have found to be unsatisfactory. Of late I am using them as a snuff. They are absorbed by the nasal mucous membrane and escape destruction by the acids and alkalis of the intestinal tracts. The results from this method of administration, I find, are very good. By using it the grafting of monkey gland may be unnecessary; and the old fashion of snuff-taking will be revived. In a powder form it is very easy to mix the various glands and give them in any proportions desired. In the short time I have used it I have, I think, seen muscular and mental vigour restored. Whether it will soften the hard arteries, reduce high blood pressure, supple stiff joints, and restore youth as the grafting of monkey gland does I cannot say, as I have not used it long enough to decide.

I hope some of your readers will try it and report their results in the JOURNAL. I use tablets pounded into a powder in a mortar; but I have no doubt some of the big firms will give us a more elegant preparation.—I am, etc.,

Southsea, Sept. 21st. D. MCASKIE, M.B.

"RHEUMATISM."

SIR,—In the BRITISH MEDICAL JOURNAL of July 21st (p. 102) is published a valuable and helpful communication by Mr. A. G. Timbrell Fisher, entitled, "The Nature of the so-called Rheumatoid Arthritis and Osteo-arthritis." Mr. Fisher emphasizes the lack of real knowledge of the etiology of these conditions, and especially draws attention to the confusing nomenclature commonly employed. I wish especially to join issue in regard to the employment of the word "rheumatism," which has certain advantages at the

present stage of our knowledge. In the first place, it is both broad and non-committal. Mr. Fisher's term "chronic arthritis," while helpful in dealing with purely joint affections, does not associate it in any way with other manifestations of rheumatism, which, as is well known, are extraordinarily protean in character. Improvement of the "chronic arthritis," as the result of treatment, is commonly associated with improvement of other manifestations of the "rheumatic lesion"—namely, muscular rheumatism, neuritic pains, etc. This frequent experience suggests the same etiological factor for all these conditions.

In South Africa, while acute rheumatic fever is relatively uncommon, the various conditions which may be broadly grouped as chronic rheumatism are extremely common. It is also interesting to note that these conditions were especially in evidence immediately after the influenza epidemic of 1918.

My experience of "rheumatism" is derived from bacteriological investigation of cases and observing the results of treatment, especially with vaccines. The extraordinary frequency with which one finds in chronic cases of "rheumatism" various streptococcus groups, such as *S. haemolyticus*, *S. viridans*, *S. mucosus capsulatus*, in association with septic teeth and gums, or in cultures of nose and nasopharynx and tonsils, brings these organisms into prominence. The good results following vaccine treatment in these cases with both stock and autogenous vaccines prepared from these organisms lends further support to their etiological importance. The frequency with which organisms of the streptococcus group, derived from widely different sources, cause arthritis in rabbits, as shown by Topley and Wear, is significant.[1]

It may well be that all cases of rheumatism—arthritis, neuritis, myositis—are due to bacterial intoxication. Even the condition traumatic osteo-arthritis lends itself to the interpretation that it is due to bacterial invasion, the resulting intoxication being localized to tissues damaged by injury.

A useful analogy is furnished by the word "diabetes." Advances in our knowledge, such as the discovery of insulin, assist us to a better understanding of this subject, but these advances in no way prevent our appreciating the value of the word "diabetes," which does not in any way commit us to an explicit statement of the etiology of the disease, and so leaves the matter an open question.

To make my point clear, I personally prefer the term "chronic rheumatism" to the term "chronic arthritis" the tone and substance of Mr. Kimbell Fisher's paper can be productive of nothing but good, and should act as a stimulus to physician, surgeon, and pathologist alike to increase their labours to advance our knowledge of this complex and highly important subject.—I am, etc.,

Johannesburg, Sept. 5th. J. Percy Johnson.

CANNABIS INDICA: A "DANGEROUS DRUG."

Sir,—It is strange that cannabis indica, its preparations and derivatives, have not been included among the drugs of the Dangerous Drugs Act, and that after our long experience of India so little appears to be known about it. The deleterious effects of the drug are, I think, thoroughly realized in India now—in fact Indian hemp is the Indian "dope." In the press reference is usually made to it under the name "hashish." This is the preparation used by natives of the Near East, Turks, Egyptians, Arabs, etc., and it corresponds pretty closely to the Indian "ganja." In India the drug is consumed in three chief forms.

1. *Bhang.*—This is an infusion of the leaves, generally of the wild plant, *Cannabis sativa* or *indica*, which is drunk especially during religious and other festivals, and ordinarily is a slightly stimulating drink much of the type of tea. Infusions, however, tend to become decoctions and to include *ganja* proper, especially in South India, and then the toxic effects of the drug become apparent. Macaulay in his essay on Clive refers to the use of bhang as a stimulant for attacking troops.

2. *Ganja.*—This is a stronger decoction of the cultivated plant, including the dried flowers to which a certain amount of gum resin is left adherent, and it has a definitely intoxicating effect. Its use is common among sadhus, fakirs, and religious devotees generally.

3. *Charas.*—This is the collected gum resin exuded by the flowering tops, and is by far the strongest and most dangerous preparation of Indian hemp used as a popular drug. It is also the most expensive, and is consequently consumed mainly by well-to-do addicts, especially in Northern India. Charas is usually smoked in a pipe (*chillum*), often as an addition to tobacco, and sometimes a mixture is taken.

I may add that a small amount of hippisia is a fairly common ingredient of various sweetmeats.

The effects of the drug are detailed in all the well-known text-books, and that its abuse is a direct source of serious mental disorder is indisputable. This fact has been stressed in many official Indian publications, and has been discussed in the medical and lay press, and as the therapeutic value of cannabis indica is nothing when compared with most of the other medicines on the dangerous drugs list there appears to be no reason why its popular use should not be similarly banned.

In 27 to 30 per cent. of male admissions to the Indian mental hospitals and asylums the insanity is directly traceable to Indian hemp, but the vice is more prevalent in certain provinces than in others. I have seen cases of insanity among women from this cause. This drug has given rise to inquiry in other countries—for instance, Ceylon and East Africa, to the Governments of which I have, by request, furnished particulars.

The mental symptoms due to hashish are as a rule confusional, but this condition is not so regularly observed as it is when other deliriant poisons have been the cause of the mental disorder. In these ganja cases very often a characteristic wild maniacal excitement of an evanescent type results. The insane habitual consumer almost always exhibits mental depressive symptoms tending rapidly to dementia.

In twenty-four years' experience in India I have seen only three cases of the use of the drug as a "dope" by Europeans. One of these was an well-to-do globetrotter who had taken drugs all his life, and who had no particular interest in Indian hemp, except to obtain prolongation of time. Another was an excise inspector, who, when we first met, was compelled to turn his back, stoop, and view me from between his legs in order to see me in the standing position. His insanity was caused by ganja, and he recovered rapidly. The third was an habitual of the beri-beri type who became demented.

In my experience, the habit, even when of long standing, can be easily broken, and the craving and abstinence symptoms are slight. The vice of drug talking is a very uncommon one among Europeans in India, so that the small number of hemp cases I have quoted cannot serve as any guide to the probable incidence of the habit should the sale of Indian hemp continue unrestricted in England.—I am, etc.,

W. S. J. Shaw, Lieut.-Colonel I.M.S.

Bournemouth, Sept. 18th.

THE ETIOLOGY OF CANCER.

Sir,—There is a widespread group of parasitic degenerations which has a wonderful power of producing new growths in the vegetable world. This group (the Exoascaceæ) causes galls on the bramble, elm, lime, hazel, currant, and on other plants. It causes the well known "witches' brooms" on birch and other trees. It produces the strange disfiguring growths, green when young, black or brown when old, so common on sallix trees around London. The *Demodex canis*, which causes "mange" in dogs, belongs to this family, and so also does the *Demodex folliculorum*, an extremely common parasite on man. The *Demodex folliculorum* is universally believed to be harmless. But is it? The credentials of demodex should be examined. If these parasites can cause such strange growths among vegetable cells, why not among animal cells?

What takes place in the case of the salix tree is very interesting and suggestive. The acarus or mite (Eriophyes) attacks the female flowers by entering the carpels. The carpels, like the other structures of the flower, are modified specialized foliage leaves, but under the influence of the mite they revert to a more primitive type. They become small, distorted foliage leaves, very numerous, and aggregated into a tumour-like mass.

[1] Journ. Path. and Bact., xxix, No. 3, 1924.

The closely related *Demodex folliculorum* lives in animal glands and amongst animal cells which may lose their power of resistance owing to chronic irritation or other cause. Is it not probable that the demodex may cause these cells to revert to a more primitive—an embryonic type? That these primitive cells, growing and multiplying out of their proper time and place, may run amok amongst the surrounding tissues and so cause cancer?

This suggestion I offer for what it is worth. It opens an avenue for investigation which, as far as I know, has not yet been explored.—I am, etc.,

London, W., Sept. 23rd. J. MCNAMARA, M.D.

MEDICAL EDUCATION IN INDIA.

SIR,—A question of vital importance to the advancement of medical education in India seems to have been discussed at a meeting of the Bombay University Senate. A number of students have been refused admission by the Dean of the Grant Medical College to the Intermediate M.B., B.S. class, the reason of the refusal being lack of clinical accommodation, especially in the midwifery wards. The latter difficulty seems to have been created by the British Medical Council's rule, lately introduced in India, that every student must attend twenty labour cases during his period of training for a medical degree.

In my opinion this is very hard in a country where the generality of women do not prefer to see male medical attendants and where the demand for duly qualified medical men is increasing every year. In my time we had to conduct six cases per student and were none the worse for that. I remember how some of us were anxious to have some more cases than their due quota, but were not allowed that indulgence.

If at all at the instance of the General Medical Council a greater number of confinement cases has to be done now by every student, and if there be not sufficient accommodation in the central teaching hospital, I am sure the Dean of the Grant Medical College can increase the available accommodation by seeking co-operation with other institutions. Besides the Cama Hospital for Women and the Persee Lying-in Hospital there are other private, semi-private, and public hospitals which could easily make teaching accommodation for a number of students every year according to the number of their beds. Allowing more students to witness the same case at the same time under suitable circumstances should also ease the situation in a perceptible manner.

In England the students can go out to attend at the patients' houses in order to finish their twenty cases. Feminine sentiment being so different in India from that in England, it will be a matter of many more years, if not decades, before Indian students can enjoy the same facilities in this direction as their British fellow students. It should be within the bounds of justice and fair play if the General Medical Council would consider the difficulties of Indian medical students in this direction, and fix the number of labour cases to be done by each student at a reasonable figure as permitted by circumstances prevalent in different parts of India, without enforcing undue harshness on the students and without starving medical education in India, at least till a suitable increase in the existing accommodation at the teaching hospitals is made as intended.—I am, etc.,

London, S.E., Sept. 4th. A. D. JILLA.

*** Our information with regard to the position in Bombay is not quite recent, but we believe some of the statements made by our correspondent to be out of date. We hope to recur to the matter shortly, and meanwhile would invite readers to suspend judgement.

SPIRITUAL HEALING.

SIR,—In the correspondence on this subject in the JOURNAL and elsewhere, it seems to be taken for granted that should the claims made be substantiated—namely, that organic diseases have been healed by the methods used—the hypothesis of spiritual healing is unassailable, so that a scientific explanation becomes impossible.

Whilst supporting your correspondents in their desire for the establishment of an exact diagnosis in these cases, I suggest that should they prove to be instances of organic disease an explanation will still be possible inside the domain of science. It may be necessary to enlarge certain biological concepts just as on many earlier occasions new facts have entailed readjustments in biology and in the physical sciences.

As to what that new hypothesis shall be—let us first get the facts as accurately as possible. A scientific understanding will obviously be no more in conflict with religion if the cases prove to be organic than if they prove to be non-organic in origin.—I am, etc.,

London, N.W., Sept. 24th. M. D. EDER.

HIPPOCRATES.

SIR,—Mr. W. H. Jones's interpretation of the *Corpus* of Hippocrates, as quoted in your issue of September 15th, 1923 (pp. 481-482), may be admirable, but his scholarship seems scarcely in keeping with the high standard that has hitherto characterized the Loeb classics. Is there any doubt as to the correctness of Professor Sticker's distinction between the meanings of *πόνος* and *ὀδύνη*?—a distinction rigidly maintained throughout classical Greek.

Πόνος primarily means "work, hard work, toil, labour," mostly "toil of war," but also "bodily exertion, hard exercise." Its secondary meaning is "the consequence of such toil, distress, trouble, suffering, pain." Ὀδύνη is always used to express "pain of body" and "pain or anguish of mind," and, further, is exclusively employed for "the pains of childbirth."

I have not read the passages in which the two words occur, and I admit that Mr. Jones's words are, "they seem practically synonymous," but, as Professor Sticker rightly points out, Hippocrates used words whose meanings were recognized and accepted throughout Hellas, and gives to every word its particular primary connotation.—I am, etc.,

Esher, Surrey, Sept. 21st. HERBERT E. GRAY.

PAY OF THE R.A.M.C.

SIR,—The pay of married officers in the Army Medical Service is inadequate. The expenses in the army to a married man are totally different to civil life. As it is impossible to get unfurnished houses, he will have to live in a furnished one, which will mean a rent of £150 to £200 per annum. He will get on an average a change of station every eighteen months, and though the Government pay fare and move baggage, other items inseparable where there is a family are not considered. Very short notice of a move is given, necessitating taking another house with probably several months of the lease of the vacated one still to run, and unable to sublet. A short time ago I was paying 4 guineas and 3 guineas a week for two months.

The specialist's pay of 5s. per diem is a farce; under the new regulations he will actually get 2s. 1d. per diem, and the 2s. 6d. per diem is reduced to 5d., which seems a poor reward for special knowledge in a particular subject.

Promotion is very slow, and for the majority of majors almost hopeless. There is no rise of pay after fifteen years until promoted, and this in the future will work out at about twenty-six years. The pension, which before the war was £365 per annum after twenty years' service, is now about £400, which hardly represents the increased cost of living.

Added to all this the R.A.M.C. is rapidly becoming a foreign service; the home tour is becoming shorter and shorter, bringing with it the usual problems of family separations, education of children, etc., and little or no compensation in the way of increased pay. I enclose my card.—I am, etc.,

September 24th. MAJOR R.A.M.C.

present stage of our knowledge. In the first place, it is both broad and non-committal. Mr. Fisher's term "chronic arthritis," while helpful in dealing with purely joint affections, does not associate it in any way with other manifestations of rheumatism, which, as is well known, are extraordinarily protean in character. Improvement of the "chronic arthritis," as the result of treatment, is commonly associated with improvement of other manifestations of the "rheumatic poison"—namely, muscular rheumatism, neuritic pains, etc. This frequent experience suggests the same etiological factor for all these conditions. In South Africa, while acute rheumatic fever is relatively uncommon, the various conditions which may be broadly grouped as chronic rheumatism are extremely common. It is also interesting to note that these conditions were especially in evidence immediately after the influenza epidemic, 1918.

My experience of "rheumatism" is derived from bacteriological investigation of cases and observing the results of treatment, especially with vaccines. The extraordinary frequency with which one finds in chronic cases of "rheumatism" various streptococcus groups, such as *S. haemolyticus*, *S. viridans*, *S. mucosus capsulatus*, in association with septic teeth and gums, or in cultures of nose and nasopharynx and tonsils, brings these organisms into prominence. The good results following vaccine treatment in these cases with both stock and autogenous vaccines prepared from these organisms lends further support to their etiological importance. The frequency with which organisms of the streptococcus group, derived from widely different sources, cause arthritis in rabbits, as shown by Topley and Weir, is significant.[1]

It may well be that all cases of rheumatism—arthritis, neuritis, myositis—are due to bacterial intoxication. Even the condition traumatic osteo-arthritis lends itself to the interpretation that it is due to bacterial invasion, the resulting intoxication being localized to tissues damaged by injury.

A useful analogy is furnished by the word "diabetes." Advances in our knowledge, such as the discovery of insulin, assist us to a better understanding of this subject, but these advances in no way prevent our appreciating the value of the word "diabetes," which does not in any way commit us to an explicit statement of the etiology of the disease, and so leaves the matter an open question.

To make my point clear, I personally prefer the term "chronic rheumatism" to the term "chronic arthritis." The tone and substance of Mr. Timbrell Fisher's paper can be productive of nothing but good, and should act as a stimulus to physician, surgeon, and pathologist alike to increase their labours to advance our knowledge of this complex and highly important subject.—I am, etc.,

Johannesburg, Sept. 5th. J. PRATT-JOHNSON.

CANNABIS INDICA: A "DANGEROUS DRUG."

SIR,—It is strange that cannabis indica, its preparations and derivatives, have not been included among the drugs of the Dangerous Drugs Act, and that after our long experience of India so little appears to be known about it. The deleterious effects of the drug are, I think, thoroughly realized in India now—in fact Indian hemp is *the* Indian "dope." In the press reference is usually made to it under the name "hashish." This is the preparation used by natives of the Near East, Turks, Egyptians, Arabs, etc., and it corresponds pretty closely to the Indian "ganja." In India the drug is consumed in three chief forms.

1. *Bhang.*—This is an infusion of the leaves, generally of the wild plant *Cannabis sativa* or *indica*, which is drunk especially during religious and other festivals, and ordinarily is a slightly stimulating drink much of the type of tea. Infusions, however, tend to become decoctions and to include ganja proper, especially in South India, and then the toxic effects of the drug become apparent. Macaulay in his essay on Clive refers to the use of bhang as a stimulant for attacking troops.

2. *Ganja.*—This is a stronger decoction of the cultivated plant, including the dried flowers to which a certain amount of gum resin is left adherent, and it has a definitely intoxicating effect. Its use is common among sadhus, fakirs, and religious devotees generally.

3. *Charas.*—This is the collected gum resin exuded by the flowering tops, and is by far the strongest and most dangerous preparation of Indian hemp used as a popular drug. It is, however, expensive, and is consequently consumed mainly by well-to-do addicts, especially in Northern India. Charas is usually smoked in a pipe (*chillum*), often as an addition to tobacco, and ganja is sometimes similarly taken.

I may add that a small amount of hemp is a fairly common ingredient of various sweetmeats.

The effects of the drug are detailed in all the well known textbooks, and that its abuse is a direct source of serious mental disorder is indisputable. This fact has been stressed in many official Indian publications, and has been discussed in the medical and lay press, and as the therapeutic value of cannabis indica is trifling when compared with most of the other medicines on the dangerous drugs list there appears to be no reason why its popular use should not be similarly banned.

In 17 to 20 per cent. of male admissions to the Indian mental hospitals and asylums the insanity is directly traceable to Indian hemp, but the vice is more prevalent in certain provinces than in others. I have seen no clear case among women of insanity from this cause. This drug has given rise to inquiry in other countries—for instance, Ceylon and East Africa, to the Governments of which I have, by request, furnished particulars.

The mental symptoms due to a bout are as a rule confusional, but this condition is not so regularly observed as it is when other deliriant poisons have been the cause of the mental disorder. In these ganja cases very often a characteristic wild maniacal excitement of an evanescent type results. The insane habitual consumer almost always exhibits maniacal-depressive symptoms tending rapidly to dementia.

In twenty-four years' experience in India I have seen only three cases of the use of the drug as a "dope" by Europeans. One of these was a well-to-do globe-trotter who had taken drugs all his life, and who had no particular interest in Indian hemp, except to obtain prolongation of time. Another was an excise inspector, who, when we first met, was compelled to turn his back, stoop, and view me from between his legs in order to see me in the standing position. His insanity was caused by ganja, and he recovered rapidly. The third was an habitual of the beach-comber type who became demented.

In my experience, the habit, even when of long standing, can be easily broken, and the craving and abstinence symptoms are slight. The vice of drug taking is a very uncommon one among Europeans in India, so that the small number of hemp cases I have quoted cannot serve as any guide to the probable incidence of the habit should the sale of Indian hemp continue unrestricted in England.—I am, etc.,

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What takes place in the case of the salix tree is very interesting and suggestive. The acarus or mite (Eriophyes) attacks the female flowers by entering the carpels. The carpels, like the other structures of the flower, are modified specialized foliage leaves, but under the influence of the mite they revert to a more primitive type. They become small, distorted foliage leaves, very numerous, and aggregated into a tumour-like mass.

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In my opinion this is very hard in a country where the generality of women do not prefer to see male medical attendants and where the demand for duly qualified medical men is increasing every year. In my time we had to conduct six cases per student and were none the worse for that. I remember how some of us were anxious to have some more cases than their due quota, but were not allowed that indulgence.

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September 24th. MAJOR R.A.M.C.

Obituary.

HENRY DAWSON FARNELL, F.R.C.S.,
Eastbourne.

HENRY DAWSON FARNELL, who died at Eastbourne on September 16th after a short illness, was born at Salisbury in 1852, studied medicine at University College, and became M.R.C.S. in 1874. He was house-surgeon at Liverpool Northern Hospital from 1875 to 1877, and in the latter year went to Eastbourne as assistant to Mr. R. Colgate, whose daughter he married in 1881. He had two sons and three daughters, all of whom survive; his wife died in 1918. In Eastbourne he soon became known as a brilliant surgeon, and his reputation extended far beyond the limits of the town. He became F.R.C.S. in 1885. He held many appointments, succeeding his father-in-law as medical officer to the Union Infirmary, a post which he held for several years, and being one of the original staff of the Princess Alice Memorial Hospital, an institution in which he took the deepest interest to the end of his life. (It is touching to note that in the announcements of his death friends are asked to send contributions to the Hospital instead of flowers to his funeral.) Mr. Farnell was appointed J.P. in 1895. During the war he was surgeon to the Eastbourne Military Hospital, and in charge of Urmston V.A.D. Hospital. In 1919 he was awarded the O.B.E., and in the same year became medical officer to All Saints' Convalescent Hospital.

No man can ever have held a higher place in the estimation of his professional brethren than H. D. Farnell. He was not only a great surgeon but above all a straight man, a man to be trusted implicitly. His patients loved him for his tender care and unselfish devotion; indeed it is no exaggeration to say that to know him was to love him. In the prime of his life Farnell was a very type of mental and bodily vigour, and his energy seemed almost incredible. Even in the last months, when a certain failure of health necessitated some slacking off of labour, he still clung to such work as was possible; on the very day of the seizure which was to prove fatal in so short a time, he took his seat on the Bench; and the first symptom of his illness occurred when he was parting from a patient. Thus he died as he would have wished, "in harness," and has left a void in the profession which will indeed be hard to fill. To the host of his friends the loss is irreparable.

We are indebted to Dr. ALEXANDER CRAIGMILE for an appreciation of his friend: Henry Dawson Farnell and I first met in the summer of 1875 at the Northern Hospital, Liverpool (now the David Lewis Northern Hospital), to which he came as senior house-surgeon, and I as house-physician. So began a friendship which lasted without a break till now. The Northern was at that time one of the chief accident hospitals in England, for to it were brought the majority of the casualties along the line of the northern docks, from the London and Lancashire Railway, and from the works and factories around. The surgical wards had many sad cases of septicaemia and pyaemia lying there with rigors and profuse sweats and copious suppuration waiting the inevitable end, a picture quite unknown to the modern surgeon.

Now Farnell, who came straight from University College Hospital, where he had been under the influence of Marcus Beck, and with the sanction of his staff, introduced the antiseptic system to the Northern, and we were soon in the full swing of Lister's ritual, as it then existed—carbolic spray, layers of carbolic gauze for dressings, with jaconette between the outer layers, disinfection of instruments, hands, and so on. Presently a marked change took place in the wards; suppuration disappeared, compound fractures healed kindly, and septicaemia and pyaemia were known no more, and so Farnell had the great honour of first introducing antiseptic surgery and Lister's methods to Liverpool. The late Mr. Chauncy Puzey, one of the honorary surgeons, in his presidential address to the Liverpool Medical Institution many years after, paid a generous tribute to the work Farnell had done in this direction. Of his work in Eastbourne it is the province of others to speak; from the beginning we were drawn to one another by mutual tastes in many things—especially in literature and politics. He was a great admirer of Sir Walter Scott, and on holidays spent together he used to quote favourite passages and pithy sayings from his favourite novels, citing one incident after another. He stayed with us for a week this summer in North Wales, and finding Scott's Journal—new to him—buried himself in it and forgot the inclement weather of May. All who knew him well were aware of the keen interest he took in motoring to new places, where an old church with famous monuments and brasses was sure to claim his attention, for he took the keenest pleasure in the history of his country and its old traditions, and knew nearly every cathedral well. It was a privilege and a joy to be with him and one or more of his family on these trips, not forgetting Carey, his faithful and devoted chauffeur. He was "the dearest friend and most unwearied spirit in doing courtesies," ever loyal and unselfish, and true to his principles, wherever they might lead him. If we can follow him in some measure, we also shall do well.

Universities and Colleges.

UNIVERSITY OF LIVERPOOL.

Honorary Degrees.

IN connexion with the meeting of the British Association in the city the University of Liverpool conferred the honorary degree of D.Sc. upon the following eminent persons: Sir Ernest Rutherford, Professor Niels Bohr, Dr. E. H. Griffiths (formerly Vice-Chancellor of the University of Wales), Professor Gilbert Newton Lewis (professor of chemistry in the University of California), Dr. Ernst Johannes Schmidt of Copenhagen (noted for his researches in marine biology), and Dr. G. Elliot Smith (professor of anatomy in University College, London).

UNIVERSITY OF DURHAM.

AT a Convocation held on Saturday, September 22nd, the following degrees were conferred:

M.B., B.S.—L. S. Henry, L. F. O'Shaughnessy.

The Services.

MINISTRY OF PENSIONS.

VOCATIONAL TRAINING.

1. THE Minister of Pensions announces that, with the consent of the Treasury, he has arranged for the scheme for vocational training of officers, nurses, and men suffering from tuberculosis, attributable to or still aggravated by service in the great war, which is at present confined in operation as regards men to residents in England, to be extended to similarly disabled men ordinarily resident in Wales, Scotland, Northern Ireland, or the Irish Free State.

This scheme provides for courses of vocational training combined with treatment at certain institutions for the treatment of tuberculosis. These courses, if satisfactorily completed, will, it is hoped, enable disabled men to become efficient workmen and to earn a livelihood. Application for admission to the training courses will be considered if the applicant is suffering from tuberculosis attributable to or still aggravated by service in the war, and if he is certified to be in consequence of that disability unable to follow his pre-war occupation or (without a course of training) any other suitable occupation and it is necessary that he should be trained for another occupation.

Scotland, Ireland, and Wales, and Officers and Nurses in England.

Application for such training may be made by men resident in Scotland, Ireland, and Wales, up to December 31st, 1923, and must be lodged in writing not later than that date with the local office of the Ministry of Pensions. Applications by officers and nurses may be made up to the same date, and must be lodged in writing not later than that date with the Commissioner of Medical Services of the Ministry of Pensions for the region in which they reside.

England.

2. The last date for making application for training by tuberculous men (that is, excluding officers and nurses) ordinarily resident in England has already passed except for: (*a*) men who have not been demobilized or discharged for more than a year; or (*b*) men who have been continuously under treatment since their discharge, and in receipt of treatment allowances; or (*c*) men who have endeavoured since discharge to resume their pre-war occupations or to enter some occupation equally remunerative, and have failed to do so (or to retain their positions) owing to a disability attributable to or aggravated by service in the war.

Application in writing may be lodged by men in these categories up to December 31st, 1923.

Convalescent Centres.

The Minister of Pensions announces that officers, nurses, and men who have hitherto been eligible to apply for admission to

Ministry of Pensions convalescent centres must, if they desire admission, make their applications in writing not later than December 31st, 1923.

The selection of cases for admission to these convalescent centres is now made from officers, nurses, and men who are undergoing in-patient (or, exceptionally, out-patient) treatment for their pensioned disability, and who are within one or other of the following categories:

1. Those who have not been demobilized or discharged from the service for more than a year.
2. Those who, though out of the service for more than a year, have since leaving the service been continuously under treatment with treatment allowances (or their equivalent).
3. Those who, though out of the service for more than a year, are able to show that they have endeavoured since leaving the service to resume their pre-war occupation, or to enter one equally remunerative, and have failed to do so (or to retain their position) owing to a disability accepted by the Ministry as attributable to or still aggravated by service in the great war.

Applications will only be considered from those who have not previously been given a course of training at the expense of the Ministry of Pensions, Ministry of Labour, Board of Education, or the Ministry of Agriculture and Fisheries, and it will of course be a condition of admission to a convalescent centre that the applicant is found, on investigation, to require permanently a change in his occupation in consequence of his disability, and to need a course of vocational training for this purpose.

At the same time the Minister of Pensions has arranged with the Minister of Labour, with the consent of the Treasury, that men admitted to concurrent treatment and training in Ministry of Pensions convalescent centres may, notwithstanding that they have failed to apply by the required date to the Ministry of Labour for vocational training under ordinary industrial conditions, if necessary, still be admitted to Ministry of Labour training centres for the completion of their training in suitable cases, if they are eligible for such training under the regulations of the Ministry of Labour.

Medical News.

THE annual prize distribution at St. George's Hospital Medical School will take place on Monday next at 3 p.m., when an inaugural address will be delivered by Mr. E. B. Turner, F.R.C.S., who will also preside at the annual dinner of past and present students in the evening.

THE annual prizes of the Charing Cross Hospital Medical School will be distributed in the out-patient hall of the hospital on Wednesday, October 3rd, at 3.30 p.m., by Dr. William Hunter, C.B., who will afterwards deliver an address on some problems of modern medical education. The annual dinner of past and present students will take place at Gatti's Restaurant at 7.30 on the same evening, under the chairmanship of Dr. T. Watts Eden, obstetric physician to the hospital.

THE first meeting of the Medical Society of University College Hospital, London, for the present session will be held in the Medical School on Friday, October 19th, at 8.30 p.m., when Professor J. E. G. de Montmorency, M.A., LL.B., will read a paper on law and medicine. The new departments of the school will be open to inspection.

THE St. Thomas's Hospital old students' dinner will be held at the Princes' Restaurant, Piccadilly, on Friday, October 26th. The chair will be taken by Mr. William Henry Battle, F.R.C.S., at 7.30 p.m. The price of the dinner, inclusive of stewards' fee, is 15s., to be paid at the Princes' Restaurant.

THE Guy's Hospital biennial dinner will be held at the Connaught Rooms on Wednesday, October 17th, at 7 p.m., when Mr. G. Bellingham Smith will preside.

THE winter session at the Central London Throat, Nose, and Ear Hospital, Gray's Inn Road, will commence on Thursday, October 4th, at 4 p.m., when Mr. William Stuart-Low, F.R.C.S., will deliver an address, "The rôle of the mucous membrane in diseases of the nose, throat, and ear."

THE inaugural sessional address of the Pharmaceutical Society of Great Britain will be given at 3 p.m. on Wednesday, October 3rd, by Dr. W. E. Dixon, F.R.S., of Cambridge. The Pereira medal will be presented on the same occasion.

AT the meeting of the Medico-Legal Society on Tuesday, October 16th, at 8 30 p.m., at the house of the Medical Society of London (11, Chandos Street, Cavendish Square, W.), Mr. W. Greaves-Lord, K.C., will introduce a discussion on miner's nystagmus.

AN inaugural lecture on the present tendencies and future compass of physiological science will be given by Professor A. H. Hill, F.R.S., at University College on October 16th at 5.30 p.m. The chairman will be Professor E. H. Starling, F.R.S., Foulerton professor of physiology, and Professor Hill's predecessor in the chair he now holds.

THE post-graduate course which is to begin at the National Hospital for the Paralysed and Epileptic, Queen Square, Bloomsbury, on Monday, October 8th, will include a set of eight lectures and demonstrations on neuro-pathology by Dr. J. Godwin Greenfield, pathologist to the hospital. The first three will deal with the cerebro-spinal fluid, the fourth with the paths of infection in the central nervous system, the fifth and sixth with the pathology of the neuron, and the seventh and eighth with reactionary changes in the central nervous system. Particulars of the course can be obtained from Dr. C. M. Hinds Howell, Dean of the Medical School.

A SPECIAL post-graduate course is being given at St. Mary's Hospital Medical School, Paddington, beginning this day, Saturday, September 29th. On that day five lectures will be given, the first at 10 a.m. On Monday, October 1st, there will be four lectures, the first beginning at 11 a.m. On Sunday, beginning at 10.30 a.m., lectures will be given on the investigation of dyspepsia and on the treatment of diabetes respectively. The lectures, which will be given in the clinical theatre of the unit (Cambridge Place entrance), are open to all medical practitioners without fee.

A LONG series of post-graduate courses in general medicine, neurology, surgery and orthopaedics, gynaecology, radiology, and other specialties have been arranged by the University of Vienna for the months of October, November, and December. A special intensive course in oto-laryngology will be held from December 3rd to 15th, and an intensive course in general medicine, pediatrics, and neurology from February 11th to 24th, 1924, with a short advanced course from February 25th to 29th. Programmes may be obtained on application to the Kursbureau der Wiener medizinischen Fakultät, Porzellangasse 22, Wien IX. A limited number of these programmes may be had at this office.

THE annual general meeting of the Medical Defence Union will be held at the Royal Hotel, College Green, Bristol, on Saturday, September 29th, at 5 p.m. The chair will be taken by the President, Sir Charles Ballance, K.C.M.G., C.B.

THE sessional meeting of the Royal Sanitary Institute will be held in Carlisle at the end of the second week in October. On October 12th a discussion on public health administration in relation to measles and whooping-cough, from the points of view of a county borough and a county area, will be opened by Dr. Beard, M.O.H. Carlisle, and Dr. Morison, M.O.H. Cumberland County Council. A paper on some aspects of housing in Carlisle will be read by Mr. Percy Dalton, deputy city surveyor. On Saturday visits will be made to the Cumberland tuberculosis colony and to the works of decorative tin box makers.

MAJOR JAMES AITKEN CLARK, M.B.E., M.B., R.A.M.C., has been granted permission to wear the decoration of the third class of the Order of the Nile, conferred upon him by the King of Egypt.

REGULATIONS were made by the Minister of Health on May 1st last providing for the manner in which any receptacle containing condensed milk is to be labelled or marked, and prescribing the minimum percentages of milk fat and milk solids in condensed milks. The date fixed for the operation of the regulations was October 1st, but as difficulties have arisen in consequence of the recent dock strike in disposing of stocks of condensed milk already in this country which do not comply with the regulations the Minister of Health has postponed until November 1st the operation of the regulations in regard to retail sales in this country. It is not intended to alter the date fixed for the application of the regulations to condensed milk imported into this country—namely, October 1st.

AT the twenty-seventh congress of French-speaking neurologists and alienists, held at Besançon from August 2nd to 7th, under the presidency of Dr. Henri Collin, it was decided that the next congress should be held in Brussels in August, 1924, under the presidency of Dr. E. de Massary, of Paris, and Dr. Glorieux, inspector of the Belgian asylums, and that the twenty-ninth congress should be held in Paris in May, 1925, under the presidency of Dr. Anglade of Bordeaux.

A SHORT time ago a conflict arose in Berlin between the panel medical practitioners and the health insurance societies in regard to fees, partly because, on account of the state of the currency, the fees had become inadequate, and partly because of undue delay in their payment. A special meeting, attended by over 1,500 panel practitioners, authorized its executive committee to cancel the contract with the societies on a certain date, if satisfactory assurances were not received; an agreement, however, was eventually reached.

THE Air Ministry has vacancies for a number of temporary staff nurses. Candidates must be between 24 and 40 years of age. Full particulars can be obtained on application to the Matron-in-Charge, Princess Mary's Royal Air Force Nursing Service, Air Ministry, Kingsway, London, W.C.2.

THE Department of Scientific and Industrial Research announces that a licence has been issued by the Board of Trade to the Research Association of British Flour Millers under the conditions laid down in the Government scheme for the encouragement of industrial research.

MR. W. HARRISON MARTINDALE, Ph.D., has prepared a new edition of the list of preparations prepared and stocked by W. Martindale, 10, New Cavendish Street, W.1. It is in a convenient form and has an index. The firm has agencies in many parts of the world, including Australia, New Zealand, and South Africa.

THE Academy of Sciences and Faculty of Medicine of Paris have each received a legacy of a million francs from the late Prince of Monaco.

MESSRS. BAILLIÈRE, TINDALL AND COX have issued a catalogue of books on dentistry, including periodical publications. The catalogue is classified and there are indices of subjects and authors.

PROFESSOR ERNEST SALKOWSKI, director of the chemical laboratory of the Berlin Charité Hospital, and one of the pioneers of physiological chemistry, has died at the age of 79.

Letters, Notes, and Answers.

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology Westrand, London;* telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westrand, London;* telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Mediaecra Westrand, London;* telephone, 2630, Gerrard.

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin;* telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh;* telephone, 4361, Central).

QUERIES AND ANSWERS.

CONGENITAL DEFORMITY.

COLONEL J. SMYTH, I.M.S. (ret.), writes: If Dr. John Walker will consult vol. iii of the *Transactions* of the South Indian and Madras Branch of the British Medical Association at page 113 (filed at the Association Library) he will find a case of congenital deformity resembling that published (p. 546) in the JOURNAL of the Association (September 22nd). I remember the case well. What struck one so forcibly was the very healthy condition of the limbless baby.

INCOME TAX.

"C. P." borrowed £1,000 for his medical course; he is now in practice and this loan has to be reduced by the excess of his receipts over expenses. How does this affect his income tax?

*** If the transaction can be shown to be that "C. P." is discharging his indebtedness by the payment of a variable annuity then he can deduct tax from the payments he makes; if, however, and this is more likely, he is simply reducing the loan by such payments and is not in fact paying an "annuity" then he cannot deduct tax. In neither case can he treat the payments as deductions in computing his own income tax liability; if they constitute an annuity such deductions are expressly forbidden by the Acts; if they are repayments of loan then they are "capital" payments and do not affect his income tax liability.

"H. J. H." inquires whether he can treat as an expense the payment of interest at 5 per cent. on the unpaid portion of the price paid for his share of the practice, including book debts, and what book on income tax can be recommended.

*** No; the Income Tax Acts expressly forbid the deduction of annual interest in computing liability; the reason is that a person making such payments is entitled to deduct income tax therefrom at the time of payment, so that that tax has to be included in the sum which he will pay to the Revenue. Nelson's *Income Tax Guide* (T. Nelson and Sons, Ltd., price 2s.) gives useful assistance in preparing returns.

"H. F. B." bought a car in 1912 for £350 and sold it this year for £100, buying a car of similar make and power for £600.

*** He can regard as a professional expense of the year 1923 the cost of replacing the old car, which is £600 – £100 = £500.

LETTERS, NOTES, ETC.

AN UNFORTUNATE BROTHER.

A FORTNIGHT ago, under this heading, we published an appeal signed by medical practitioners in Mirfield asking for contributions to a fund to help Dr. F. A. Storr of that place, who, as a result of thrombosis of the right femoral artery, leading to gangrene, had to undergo amputation of the upper part of the thigh some time ago. He is now suffering from a recurrence of illness, and his already depleted financial resources are strained. The West Riding Medical Charitable Society has made him a gift, but it is hoped that members of the profession will contribute. Subscriptions may be sent to the London Joint City and Midland Bank, Limited (Mirfield Branch), or to one of the practitioners in Mirfield who sign the appeal—Drs. T. W. Sproulle, Leslie J. Milne, H. W. Elwell, and H. J. Dawson.

CANNABIS INDICA IN SMOKING TOBACCO.

MR. T. F. HUGH SMITH, F.R.C.S. (Farningham), writes with reference to the memorandum published on September 22nd (p. 521): The following reference occurs in *Among the Wild Tribes of the Afghan Frontier*, by the late T. L. Pennell, M.D., B.Sc., F.R.C.S., in describing the influence of the Afghan Mullah; this passage is found on page 119:

"He regards the smoking of tobacco as one of the works of the devil, and when the Mullah makes his visitation to some village there is a general scramble to hide away all the pipes; for not only would any that he found be publicly broken, but the owner would incur his displeasure. As the Afghans do not confine themselves to the soothing weed, but mix it up with a number of intoxicating and injurious substances, such as Indian hemp or charras, this attitude of the Mullah may be regarded in the light of a reform."

THE "BRITISH MEDICAL JOURNAL" IN GERMANY.

MR. HUGH RICHARDSON, Stocksfield-on-Tyne, Northumberland, writes: A few copies of the BRITISH MEDICAL JOURNAL recently posted to the University Library at Giessen in Germany have been very cordially acknowledged. The message continues: [Translation] "You will understand that the possession of this celebrated medical journal is now quite specially valuable to us, so much the more since we have the complete years from 1890 to 1913 in our library." Is it possible that any of your readers who have kept back numbers from 1914 to August, 1923, would like to offer these to complete the series? If so, please address the offer direct to Frl. Nora Brückmann, Hessische Universitäts Bibliothek, Giessen, Germany, without further mediation.

CANCER AND CARIOUS TEETH.

DR. R. J. LOVE (Staplehurst, Kent) writes: I practised in Cape Province, South Africa for 14 years (1901–15) and during that time I do not remember having seen a case of cancer among the natives. Another fact which struck me was that the natives do not suffer from carious teeth. If a native does happen to get toothache he will trudge to the nearest dentist or doctor, perhaps 30 miles away, to have it extracted. Since I returned to England I have seen quite a number of cases of cancer and they all suffered from carious teeth. Carious teeth are on the increase and so is cancer, and I put forward the theory that the carious teeth are the cause of cancer. I shall be glad if someone who has had the opportunity of observing large numbers of cases will contradict the above if my theory is not borne out.

SCANDINAVIAN MEDICAL JOURNALS.

IN our last issue (p. 533) we gave some particulars of Scandinavian medical journals. Messrs. Baillière, Tindall and Cox (8, Henrietta Street, London, W.C.2) inform us that they are acting as English agents for the *Acta Gynaecologica*, and can accept subscriptions and arrange for the supply of any other publications in that series.

A WARNING.

DR. M. J. HORGAN (Nottingham) writes to advise medical men interested in Ireland to be cautious in their dealings with a young man seeking to dispose of a copy of *The Story of the Irish Race* by S. MacManus. The book is published by the O'Molloy Publishing Company, Donegal, and intending purchasers might do well to communicate with them direct.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 29, 32, 33, 34, and 35 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 30 and 31.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page *148*.